Original Paper

Pain and Somatic Symptoms in Tortured Refugees: A Clinical Survey

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Abstract

    Torture may be associated with long-lasting somatic symptoms, only partly explained by physical injuries. Physical pain as a result of torture may seriously complicate the diagnostics and treatment of posttraumatic pathology in refugees. The question whether a relation exists between the experience of torture and the extent of reported medically unexplained physical symptoms, is therefore highly relevant. We firstly hypothesized that refugees who underwent torture will report more somatic symptoms, as operationalized by experienced pain, than refugees without a history of torture. Secondly, we hypothesized gender and region of origin to be significant risk factors. With the data set of a large clinical population of refugees (N=940), we examined specific pain items of a somatic complaints questionnaire (PILL), of a general symptom check list (HSCL-25), and of a trauma questionnaire (HTQ) in relation to torture reports. Pain scores on one item level were significantly higher in tortured refugees than in non-tortured refugees, on the other items not. In addition, gender moderated the relationship between reported torture and pain, with women reporting more physical symptoms than men. Region of origin had no influence on this relationship. Torture as traumatization has a connection with somatic symptoms, which means that this can enhance the unnecessary use of somatic treatment modalities, if there is no somatic disorder present. Increasing motivation for psychological trauma treatment is a recommended approach, since refugees with torture experience and somatic symptoms without physical origin can profit from it.

Keywords: *Refugees, Torture, Pain, Somatisation, PTSD*

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INTRODUCTION

According to our systematic review of empirical studies (Rohlof et al., 2014), the prevalence of somatization among refugees from non-Western countries living in the Western world is high compared to the general Western population. Although included studies employed different methodologies which make results difficult to compare, there appears to be substantial evidence that refugees form a population in which somatization is prominent. Explanations for this high prevalence referred to different factors, such as pre-existing psychopathology, an accumulation of traumatic events, in particular torture, the stresses and strains of being a migrant, and stigmatisation of mental illness in psychiatric care (Van Ommeren et al., 2002). In addition, other reasons for somatization could be present, like differences in language and idioms of distress (Rohlof et al., 2014).

According to the definition of Lipowski (1988), somatization is 'a tendency to experience and communicate somatic distress and symptoms unaccounted for by pathological findings, to attribute them to physical illness, and to seek medical help for them' (page 1359). Somatization may form a significant obstacle in the treatment process, not only in mental health care but also in health care in general. It has been shown that refugees tend to emphasize their somatic health problems in symptom presentation. For instance, in a study among Iraqi refugees, women reported somatic complaints in about one third of the population (Laban et al., 2004). Also, these refugees were more inclined to seek medical help for their problems in general hospitals than in mental health institutions (Laban et al., 2007). As a result, since there is no physical cause, medical interventions have no effect and health problems persist. As a consequence symptoms are psychologically labelled and a referral to mental health care is indicated. Yet, the emphasis on somatic distress may hamper the access of refugees to proper adequate mental health care and the effectiveness of psychological interventions. This is particularly unfortunate as meta-analytic reviews on psychotherapeutic treatment effects among traumatised refugees showed positive outcomes, especially with regard to cognitive behaviour therapy and narrative exposure therapy, although there were no specific efficacy studies included on refugees with torture experiences (Crumlish & O'Rourke, 2010; Nickerson, 2017; Slobodin & de Jong, 2015). Explaining that there may be a direct link between torture and medically unexplained pain symptoms could persuade refugees to enter treatment in mental health programs, rather than in general health hospitals. In this procedure, a thorough medical examination is necessary to be sure that there are no physical reasons for the somatic symptoms. This demands substantial efforts in the early phase of the treatment, with particularly emphasis on psychoeducation and tailoring to the explanatory model used by the patient. Exploring with somatising patients the possibility that their unexplained somatic symptoms could be psychologically initiated is not easy, even in native patients. These efforts, of which the so-called 'effects model' (only treat the effects of the somatic problems, not the causes) is an example, fall beyond the scope of this article (Kroenke, 2007). In this article, we focus on the connection between torture and somatization in refugees who sought treatment in a large mental health clinic, located in the Netherlands.

Torture

There are several definitions of torture. The most widely accepted definition of torture is described in Article 1 of the United Nations Convention Against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment (United Nations (UN) 1995, page 1)

> "... 'torture' means any act by which severe pain or suffering, whether physical or mental, is intentionally inflicted on a person for such purposes as obtaining from him or a third person information or a confession, punishing him for an act he or a third person has committed or is suspected of having committed, or intimidating or coercing him or a third person, or for any

reason based on discrimination of any kind, when such pain or suffering is inflicted by or at the instigation of or with the consent or acquiescence of a public official or other person acting in an official capacity..”

Torture is an act meant to keep the victim alive, and pressing him or her to give information or confessions, by means of heavy physical or psychological pressure. There are more physical methods of torture than one can imagine, but the most common methods are beating and physical violence, hanging, electrical shocks, raping and other sexual assaults, heavy noises, and drowning or waterboarding. Psychological torture methods include isolation, mock execution, blackmailing with torture of others, and humiliation. A strict difference between these two categories is not possible since most often both are used together.

Torture has direct and long-lasting effects on individuals. Direct effects are provoked by the perpetrators, with the intention to mentally break the person, so that he or she will cooperate with the perpetrator. Remarkably, in clinical and research literature there has been more attention to psychological long-term effects than to somatic or somatoform effects. Quiroga and Jaranson performed a review on studies about effects of torture. They mentioned psychological symptoms (anxiety, depression, irritability/aggressiveness, emotional liability, isolation, withdrawal); cognitive symptoms (confusion/disorientation; memory and concentration impairments); and somatic symptoms of the neurovegetative system (lack of energy, insomnia, nightmares, sexual dysfunction). Reported mental disorders as effect of torture were posttraumatic stress disorder (PTSD) and depression, and in less frequent cases other anxiety disorders and substance abuse (Quiroga & Jaranson, 2005). The most important physical consequence of torture was chronic pain experienced in multiple parts of the body. Torture survivors also reported several physical symptoms: acute injuries, sometimes temporary, such as bruises, hematomas, lacerations, cuts, burns, and fractures of teeth or bones. One study showed that after ten years pain was still highly prevalent (Amrish, 2005). Other more specific impairments are dependent on the nature of the torture. In regard to our study, it is clear that some physical symptoms are the result of older physical injuries. But if no current somatic origin of the complaints has been stated, we have to speak of somatization.

In a large meta-analysis 48 epidemiological studies were reviewed of individuals who underwent war traumas and torture and who developed PTSD (Johnson & Thompson, 2008). All the studies were about civilians, mostly of non-Western countries. There was some proof of a 'dose-response relation': the more severe the torture, the more PTSD symptoms in the aftermath. Female gender and old age were risk factors. Post migration effects like problems with asylum procedures, lack of employment and lack of social support also worsened psychiatric complaints. However, being prepared for the torture appeared to be a protective factor. Higher resilience levels, meaning greater ability to exercise control over the torture stressors, were associated with less perceived distress during torture and less PTSD subsequently. Research in Turkey showed that political active detainees who were tortured and who were probably more prepared to undergo torture in prisons, showed less distress and effects of torture than less or not political active detainees (Basoğlu & Paker, 1995; Başoğlu et al., 2007).

In order to improve mental health care for tortured refugees, we studied the relationship between having experienced one or more torture incident(s) and reporting somatic symptoms. We firstly hypothesized that refugees who reported that they underwent torture will report more somatic symptoms, as operationalized by experienced pain, than refugees without a history of torture.

Secondly, we hypothesized gender and region of origin to be significant risk factors. Although a large study did not find any difference in prevalence rates of somatization in 14 different world regions (Gureje, 1997), we decided to have a look on this from our data, in order to replicate this. Tortured women are expected to report more somatic symptoms than men (Schubert, 2011). Although region of origin and gender could have a large influence on the occurrence of somatic symptoms in refugees, we hypothesised that the experience of torture is the most substantial factor in subsequent somatic symptoms, larger than gender and region of origin.

METHOD

Setting

Centrum '45 is the national Dutch institute for the psychotherapeutical and psychiatric treatment of victims of war, persecution and violence. To this institute an increasing number of refugees from Western and non-Western countries are referred for diagnosis and treatment. Treatment programs for this population include outpatient, day-clinical and inpatient settings.

Data of 940 refugee patients, all the refugee patients who were referred to the institute between the 8th of February 2002 and the 24th of April 2014, were gathered. These refugees were referred because of enduring posttraumatic and depressive symptoms, mainly by other mental health institutes and sometimes by general practitioners. In the sample more male patients than female are represented, the mean age is 40.9 years (SD 10.5). The most frequently reported regions of origin are the Middle East, Sub-Saharan Africa and South-East Europe (Table 1 presents the details).

Table 1. Characteristics of the sample.

	Frequency	Percentage
Middle East	542	57,7
Sub-Saharan Africa	141	15,0
South East Europe	168	17,9
Total	**851**	**91,6**
Male	671	71,4
Female	269	28,6
Total	**940**	**100**

Instruments

During the assessment phase, a clinical intake interview and different questionnaires were conducted. The questionnaires were the Harvard Trauma Questionnaire (HTQ), the Hopkins Symptom Check List 25 (HSCL-25), and the Pennebaker Inventory of Limbic Languidness (PILL). These three questionnaires have generally been used for refugees in many empirical studies and they have been validated for different groups of refugees. Moreover, different language versions have been validated, which increases the use of these questionnaires for refugees who are not fluent in English or Dutch.

The HTQ assesses traumatic experiences and symptoms of posttraumatic stress disorder (Mollica et al., 1992). It is a self-report questionnaire consisting of three sections: a section on the range of traumatic experiences with four categories of response ('experienced', 'witnessed', 'heard

about', and 'no'), a section with open-ended questions on subjective descriptions of the traumatic events, and a 30-item section on the symptoms of PTSD, with four categories of response, ranging from 'not at all' till 'extremely'. The HTQ has been validated for refugees from different origins and in different languages (De Fouchier et al., 2012; Oruc et al., 2008; Shoeb et al., 2007; Kleijn et al., 2001; Wind et al., 2017). The instrument was also validated in our clinic in different language versions (Arabic, Farsi, Serbo-Croatian, Russian, and English bilingual adaptations). The psychometric properties were adequate to good across different cultures (Kleijn et al., 2001). Moreover, recent research established measurement invariance for these instruments across different refugee cultures (Wind et al., 2017).

The HSCL-58 was originally constructed for psychiatric patients to measure symptoms of anxiety and depression (Derogatis et al., 1974). Mollica et al. (Mollica et al, 1987; Mollica et al., 2004) constructed a 25-item version especially for refugees. It uses 10 items assessing anxiety, 13 items assessing depression, and two additional somatic symptoms ('poor appetite' and 'difficulty falling asleep or staying asleep'). Respondents can choose between 4 answer categories: symptoms bothered or stressed you in the past week not at all, a little, quite a bit, or extremely. The HSCL-25 was also examined in our institute and showed good reliability and validity among refugee patients (Mollica et al., 1992).

The PILL was constructed by Pennebaker to examine the level of somatization of a patient (Pennebaker, 1982). It is a self-report Likert scale with 5 answer categories: burden in the last year of the specific symptom seldom or never (once a year or never), sometimes (twice a year), regularly (once a month), often (once a week), or almost always (several times a week). Construct validity of the PILL has been demonstrated by significant correlations between the PILL and other measures of physical health complaints, including the somatization subscale of the SCL-90-R (r =.55, p <.05), which consists of items describing physical symptoms and the SMU Health Questionnaire (r =.49, p <.05), a 63-item checklist of complaints, minor illnesses, and more serious and chronic health problems. The PILL has a high internal consistency, with a Cronbach's alpha of .91 (Cropley et al., 2005; Polusny et al., 2008)

Procedure

Patients were asked if they were able to complete the questionnaires by themselves in a quiet room in the clinic. If the answer was positive, they were left alone with the questionnaires, but these were checked afterwards in the presence of the patient by a psychometrical assistant on missing values. The questionnaires could thus be made complete in the case of missing answers. If a patient was unable to complete the questionnaires, an assistant would ask the questions, in most cases in the presence of an interpreter. Some patients were illiterate, or were not able to fully understand the questions. Although a major effort was made by the assistants and the interpreters in completing all the values, there were in some cases missing values.

Assessment of torture

For the determination of 'being tortured', two items in the HTQ were used: item 16, Physical torture, and item 19, Threatened to be executed. We consider these two items as the torture experiences; although this is not fully in concordance with the broad definition of UNCAT (see before). Grouping the two items together, we created a group of tortured refugees, and compared this group with the remainder of the population, the non-tortured refugees. The HTQ unfortunately did not present wider signs of torture, neither did the other questionnaires.

DATA ANALYSIS

Because of missing items, data analysis was limited to 781 refugee patients. Table 3 presents means and standard deviations of the current pain symptoms in tortured and in non-tortured refugees. The sample was limited to three different regions of origin: Middle East, Sub-Saharan Africa and

South-East Europe (N=705), as rates for persons from other parts of the world were too low represented for a valid comparison. Some of the calculations below have been made with the total group of 940 refugee patients, some with the smaller group of 781, because of missing items in the questionnaires, and some with the group of 705 patients because of the limitation of the region of origin. All calculations were based on statistical analyses, since the occurrence of symptoms was not absolute, but derived from a Likert scale.

Statistical tests were performed using SPSS-24. First, we computed the variable 'pain symptoms' by combining scores of the items PILL#15 (chest pains), PILL#51 (sore throat) and HSCL#8 (headaches). Differences between tortured and non-tortured patients were tested by means of a t-test of between-subject effects on the dependent variables (somatic and pain symptoms) and torture as the independent variable.

After the univariate analyses, we performed an ANOVA to study the influence of region of origin and gender on the report of pain symptoms in relationship to the report of torture experience.

RESULTS

Torture

According to our definition 703 (74.9%) patients of the total sample of 940 subjects were tortured. Although torture was more common in men (78.1 %) than in women (66.5 %), the difference was not significant (see Table 2).

Table 2. Frequency of torture and gender division in the total sample

	Torture	No torture	Total
Males	524	147	671
Females	179	90	269
Total		**237**	**940**

Torture and reported pain

Tortured refugees report more chest pains than non-tortured participants (t = -2.32, p< 0.05), but not more headaches (t=-1.54, n.s.) and sore throat (t= 0.19, n.s.). Table 3 shows mean and standard deviations of the dependent variables.

Table 3. Means and SD's of different pain complaints in non-tortured vs tortured refugees (HSCL: scale 1-4, PILL: scale 1-5). Headaches t= -1.54, n.s., Chest pains t=-2.32, p<0.05, Sore throat t=0.19, n.s.

Item	Torture No/Yes	Mean	Std. Deviation	N
HSCL 8: Headaches	N	2.98	0.997	188
	Y	3.12	0.943	593
Total		**3.09**	**0.958**	**781**
PILL 15: Chest pains	N	2.42	1.395	188
	Y	2.76	1.423	593
Total		**2.16**	**1.183**	**781**
PILL 51: Sore throat	N	2.16	1.183	188
	Y	2.17	1.216	593
Total		**2.17**	**1.207**	**781**

Our hypothesis that refugees who reported torture experiences will report more somatic symptoms (as operationalized by experienced pain) than refugees without a history of torture was thus only partly confirmed.

Regions of origin, torture and reported pain

Torture appeared to be more common in refugees coming from Africa and the Middle East: persons from Sub-Saharan Africa reported the experience of torture in 0.86 of all cases, and persons from the Middle East in 0.75 of all cases, persons from Eastern Europe reported having been physically tortured in 0.57 of the cases ($p < 0.001$). See Table 4.

Table 4. Means of tortured persons from different regions of origin. $P < 0.000$

Region of origin	Mean	Std Deviation	N
Middle East	0.75	0.42	542
Sub-Saharan Africa	0.86	0.34	141
South East Europe	0.57	0.49	168
Total	**0.73**	**0.43**	**851**

The occurrence of the pain symptoms headaches ($F_{(2,724)} = .065$, n.s.) and sore throat ($F_{(2,729)} = 0.769$) in patients from different regions of the world did not differ significantly; only chest pains showed a tendency to differ ($F_{(2,732)} = 2.38$, $p < 0.10$): partly in line with our hypothesis, patients from South East Europe reported the most chest pains, patients from Sub-Saharan Africa the least (see Table 5).

Table 5. Means and SD's of different pain complaints in refugees from different regions of origin. Headache p= 0.919. Chest pains p= 0.055. Sore throat p= 0.475

	Region of origin	Mean	Std. Deviation	N
HSCL 8: Headaches	Middle East	3.08	0.973	450
	Sub-Saharan Africa	3.05	1.011	126
	South East Europe	3.10	0.883	129
Total		**3.08**	**0.963**	**705**
PILL 15: Chest pains	Middle East	2.64	1.431	450
	Sub-Saharan Africa	2.47	1.384	126
	South East Europe	2.85	1.404	129
Total		**2.65**	**1.421**	**705**
PILL 51: Sore throat	Middle East	2.20	1.236	450
	Sub-Saharan Africa	2.09	1.180	126
	South East	2.14	1.109	129
Total		**2.17**	**1.203**	**705**

Gender

In line with our hypothesis, women reported more pain symptoms then men: females reported more chest pain (t= -2.14, p=0.05), more sore throat (t=-2.59, p<0.05), and more headaches (t=-2.84, p<0.01) than males, see Table 6.

Table 6. Means and SD's of different pain complaints in male and female refugee patients.

	Gender	Mean	Std. Deviation	N
HSCL 8 Headaches	Male	3.02	.967	555
(scale 1-4)	Female	3.26	.917	226
	Total	**3.09**	**.958**	**781**
PILL 15: Chest pains	Male	2.58	1.381	555
(scale 1-5)	Female	2.92	1.498	226
	Total	**2.68**	**1.423**	**781**
PILL 51: Sore throat	Male	2.08	1.154	555
	Female	2.40	1.304	226
	Total	**2.17**	**1.207**	**781**

Multivariate analysis

As predicted, torture was the only significant factor regarding reported pain symptoms (chest pain) in the multivariate analysis with region of origin and gender as fixed factors (R = .031, p <0.05) See Table 7.

Table 7. Tests of Between-Subject Effects

	Type III Sum of Squares	Df	Mean Square	F	Sig.
Region*Gender	2.577	2	1.289	.657	.519
Region*Torture	1.474	2	.737	.376	.687
Gender*Torture	.025	1	.025	.013	.909
Region*Gender*Torture	2.234	2	1.117	.570	.566

DISCUSSION

In our sample of refugee patients who were referred to our specialized trauma clinic, the experience of torture was omnipresent. Even with our restricted definition of torture, being only physical torture and the threat of being executed, torture was reported in almost 3 out of 4 patients (more in males than in females, but no statistical difference). These percentages are higher than percentages mentioned in the scientific literature, where clinical samples of refugee patients showed percentages of 6.6 % till 70 % in males and 31 % in females (Quiroga, Jaranson, 2005). In a systematic review (Campbell et al., 2017) the percentage of torture in population samples of refugees was estimated at 21 %: our clinical population scored much higher, which is of course no surprise. Torture also accounted for the highest inter-survey variance of PTSD and depression (Polusny et al., 2008).

As stated before, somatic symptoms were surprisingly highly present in our patient population. However, to compare this on item level with other research on this subject is difficult, since we offer only outcomes on Likert scales, not percentages. Furthermore, this patient population showed in general far more somatic symptoms (75 %), than the general refugee population which was studied earlier in the Netherlands, showing pain problems in 11 % of all cases (Laban et al., 2007) but this also not a surprise, since psychiatric and somatic symptoms co-occur in a large degree.

Our first hypothesis that the pain symptoms were more frequent in tortured refugee patients than in non-tortured patients, even when this torture has been committed long ago, was only partly confirmed. Only the symptom of chest pain showed a significant difference between tortured and non-tortured patients. Non-cardiac chest pain (NCCP) is not uncommon in health care: it is the complaint of more than 7 million emergency department (ED) visits and as many as 27 million office visits in the United States each year (Steel et al., 2009). It has been identified as connected with anxiety disorders, such as panic disorder and PTSD). The association with depressive disorders is more complex and bidirectional. A link with the symptoms of refugee patients with psychiatric symptoms is obvious. Since anxiety disorders are omnipresent in refugees, NCCP could be considered as the somatic manifestation of these disorders. Torture as a main cause for anxiety will have a large influence on NCCP, too. It could be that torture affects the body more than other traumatic events, which results in

a specific common pain symptom like NCCP. However, a clear proof for this cannot be given from our data.

Our other hypotheses that the regions of origin and gender have effects on the occurrence of somatic symptoms after torture were partly confirmed. Region of origin was not related to the reporting of somatic symptoms after torture. This may refute an indication of cultural influences on reporting somatic symptoms, at least after being tortured and between refugee population groups coming from Eastern Europe, the Middle East and Africa. Pain after torture appeared to exceed cultural differences, as a common language of traumatic experiences. Pain perception in general includes sensory experiences but also emotional and cognitive factors. As such it is also influenced by culture, as shown in many studies, mainly about Western patients compared to non-Western patients (Cropley et al., 2005). Cognitive factors can imply catastrophizing ideas about what pain could indicate in terms of physical deficits. Somatic symptoms can result in thinking about serious outcomes of diseases which can even accelerate the stress level. NCCP can be interpreted as a signal of a supposed heart failure, or of other somatic diseases in the chest. This could evolve in interethnic differences in pain perception. However, in our sample of tortured patients from three different regions it did not. We conclude that the influence of torture and other traumatic experiences are more prominent in the aetiology of pain than differences of culture.

Gender, however, did make a difference in our study: females reported more chest pains and sore throat complaints after being tortured in the past than men. This is in concordance with a recent meta-analysis on chronic widespread pain in the general population, where females reported more pain complaints than men, in a ratio range of the different studies from 1.06 till 4.80 (Mansfield et al., 2016). So, in the general population, females show more pain symptoms than men, independent of traumatization or other causal factors. In our research we found the same with seriously traumatised and tortured patients: females show more pain. This is also concordant with earlier research as described in the introduction (Van Ommeren et al., 2002; Lipowski, 1988). An explanation for this could be that men manifest stress symptoms more in anger and alcohol abuse, while women show stress symptoms more in somatic complaints and depression (Maguen et al, 2010).

IMPLICATIONS FOR CLINICAL PRACTICE

Pain symptoms in refugees could be related to torture experiences, and torture experiences can be treated by psychotherapeutical modules for posttraumatic stress disorder (PTSD) (Crumlish & O'Rourke, 2010; Nickerson, 2017; Slobodin & de Jong, 2015). Our findings have implications for the treatment of refugees. Asking about torture experiences in the first assessment interviews in mental health care is something most clinicians find quite difficult, because of the confrontation with the painful memories and the resulting emotions. Yet, this is a necessary issue in the psychiatric and general health assessment of refugees. Next to this, in general health care there should be more attention to the long-lasting effects of torture in refugees, since a long trajectory in only somatic care could be negative for a treatment in psychiatry and psychotherapy, and would also be time and money consuming and less effective. As such, it would also ask for more cooperation between medical and psychological or psychiatric care providers, which is often not the case. Medically unexplained physical symptoms can point at unprocessed memories of torture and other traumatic experiences (Flor, 2013).

Of course, there should be a physical examination of the patient, since pain could be the consequence of tissue lesions or other somatic illnesses. This should not only been done in general medicine, but should also be part of the normal assessment procedure in mental health care of refugees. If no direct causes of pain can be found, the protocol for unexplained pain has to be added to the psychological treatment of the refugee patient, since remaining symptoms can further handicap the

patient (van Dessel et al., 2014). Programs including physiotherapy and psychomotor therapy have been used for this, till now however with mixed results.

STRENGTHS AND LIMITATIONS

There are several strengths in this research. The studied population is a very large group of traumatised refugee patients, larger than in any other published study. A large sample has a high power. Clear connections between torture, gender, region of origin and pain symptoms have thus been shown. So, the finding that torture is not significantly associated with difference in pain symptoms is well proven. There are some other studies which show a connection between somatization with torture in refugees, but they contain only small numbers of refugees (e.g., one study only sixteen, the other study twenty).

Next to this, we used cross-cultural validated questionnaires in many languages which were translated back and forth. Also, we did not exclude any patients. All patients who were referred to our institute in the given time period, were included.

There are also some limitations in this study. The study is based on self-report questionnaires, for the pre-existent torture experience as well as for the symptoms. There may be a risk of over-scoring or under-scoring of the symptoms, and of the traumatic experiences including torture. In the systematic review which was mentioned earlier (Steel et al., 2009), self-reports of depression were higher than reports derived from clinical interviews: 36.7 % vs 23.2 %. This may point at higher scoring if we only use self-reports.

Since we studied the results of refugees who were referred to our institute, we were not able to look at stigmatization, as the patients already took the step to be referred to our institute, widely known as a psychiatric clinic. Also, we could not look at the effect of lack of traumatization, because this is a condition for referral to our institute.

FINAL STATEMENT

In this large sample of refugees, evidence for a strong relation between reported torture and physical complaints later on in life was not unequivocal. Nonetheless, providing adequate treatment protocols for tortured patients suffering from both psychological and physical complaints may be crucial for effective health care among refugees.

ETHICAL STATEMENT

By writing a statement, all patients have declared, that the data derived from the self-report questionnaires can be used, anonymously, for scientific purpose. This procedure is approved by the ethical committee of the institute.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest, connected to this paper.

REFERENCES

Amrish, S. (2005). *Chronic pain in survivors of torture –psyche or soma?* In: Berliner, P., Arenas, J., Haagensen, J.O. (eds). Torture and organized violence: Contributions to a professional human rights response. Danish Psychology Publishers, Copenhagen, pp 31-70.

Başoğlu, M., Livanou, M., Crnobarić, C. (2007). Torture vs Other Cruel, Inhuman, and Degrading Treatment. Is the Distinction Real or Apparent? *Arch Gen Psychiatry*, 64: 277-285. doi:10.1001/archpsyc.64.3.277.

Basoğlu, M., & Paker, M. (1995). Severity of Trauma as Predictor of Long-term Psychological Status in Survivors of Torture. *J Anx Dis*, 9, 339- 350.

Campbell, K.A., Madva, E.N., Villegas, A.C., Beale, E.E., Beach, S.R., Wasfy, J.R., Albanese, A.M., Huffman, J.C. (2017). Non-cardiac Chest Pain: A Review for the Consultation-Liaison Psychiatrist. *Psychosom*, 58, 252–265.

Crumlish N & O'Rourke K (2010). A Systematic Review of Treatments for Post-Traumatic Stress Disorder Among Refugees and Asylum-Seekers. *J Nerv Ment Dis* 198: 237–25.

Cropley, M. & Steptoe, A. (2005). Social support, life events and physical symptoms: A prospective study of chronic and recent life stress in men and women. *Psychol Health Med*, 10, 317 – 325.

De Fouchier, C., Blanchet, A., Hopkins, W., Bui, E., Ait-Aoudia, M., Jehel, L. (2012). Validation of a French adaptation of the Harvard Trauma Questionnaire among torture survivors from sub-Saharan African countries. *Eur J Psychotraum*, 3, ArtID 19225. doi: 10.3402/ejpt.v3i0.19225.

Derogatis, L.R., Lipman, R.S., Rickels, K. (1974). The Hopkins Symptom Checklist (HSCL): a self-report inventory. *Behav Sci,* 19, 1-15.

Flor, H. (2013). *Cultural Influences on Perceptions of Pain.* In: Barnow, S,, Balkir, N. (ed.), Cultural Variations in Psychopathology. Cambridge MA: Hogreve.

Gureje, O., Simon, G.E., Ustun, T.B., Goldberg, D.P. (1997). Somatization in cross-cultural perspective. A World Health Organisation study in primary care. *Am J Psychiatry*, 154: 989-995

Johnson, H., & Thompson, A. (2008). The development and maintenance of post-traumatic stress disorder (PTSD) in civilian adult survivors of war trauma and torture: A review. *Clin Psychology Rev* 28, 36-47.

Kleijn, W.C., Hovens, J.E., Rodenburg, J.J. (2001). Posttraumatic stress symptoms in refugees: assessments with the Harvard Trauma Questionnaire and the Hopkins Symptom Checklist-25 in different languages. *Psychol Reports*, 88, 527-532.

Kroenke, K. (2007). Efficacy of treatment for somatoform disorder: A review of randomized controlled trials. *Psychosom Med*, 69: 881-888

Laban, C.J, Gernaat, H.B.P.E, Komproe, I.H. De Jong, J.T.V.M. (2007). Prevalence and predictors of health service use among Iraqi asylum seekers in the Netherlands. *Soc Psychiatry Psychiatr Epidemiol*, 42: 837–844.

Laban, C.J., Gernaat, H.B.P.E., Komproe, I.H., Schreuders, B.A., De Jong, J.T.V.M. (2004). Impact of a Long Asylum Procedure on the Prevalence of Psychiatric Disorders in Iraqi Asylum Seekers in The Netherlands. *J Nerv Ment Dis*, 192: 843–851.

Lipowski, Z.J. (1988). Somatization: The concept and its clinical applications. *Am J of Psychiatry*, 145: 1358-1368.

Maguen, S. Ren, L., Bosch, J.O. Marmar, C.R. Seal, K.H. (2010). Gender differences in mental health diagnoses among Iraq and Afghanistan veterans enrolled in Veterans Affairs health care. *American Journal of Public Health*, 100, 2450-2456.

Mansfield, K.E., Sim, J., Jordan, J.L., Jordan, K.P. (2016). A systematic review and meta-analysis of the prevalence of chronic widespread pain in the general population. *Pain*, 157, 55-64.

Mollica, R.F., Caspi-Yavin, Y., Bollini, P., Truong, T., Tor, S., Lavelle, J. (1992). The Harvard Trauma Questionnaire: Validating a cross-cultural instrument for measuring torture, trauma, and posttraumatic stress disorder in Indochinese refugees. *J Nerv Ment Dis*, 180, 111–116.

Mollica, R., McDonald, L., Massagli, M., Silove, D. (2004). *Measuring Trauma, Measuring Torture: Instructions and Guidance on the Utilization of the Harvard Program in Refugee Trauma's Versions of the Hopkins Symptom Checklist-25 (HSCL-25) and the Harvard Trauma Questionnaire (HTQ).* Cambridge MA: Harvard Program in Refugee Trauma.

Mollica, R.F., Wushak, G., de Marneffe, D., Tu, B., Yang, T., Kuon, F., Lavelle, J.(1987). Indochinese versions of the Hopkins Symptom Checklist-25: A screening instrument for the psychiatric care of refugees. *Am J Psychiatry*, 144, 497-500.

Nickerson, A., Bryant, R.A., Silove, D., Steel, Z. (2011). A critical review of psychological treatments of posttraumatic stress disorder in refugees. *Clin Psychology Rev*, 31, 399-417.

Oruc, L., Kapetanovic, A., Pojskic, N., Miley, K, Forstbauer, S., Mollica, R.F., Henderson, D.C. (2008). Screening for PTSD and depression in Bosnia and Herzegovina: Validating the Harvard Trauma Questionnaire and the Hopkins Symptom Checklist. *Int J Cult Ment Health*, 1, 105-116.

Pennebaker, J.W. (1982). *The psychology of physical symptoms*. New York: Springer.

Polusny, M.A., Ries, B.J., Schultz, J.R., Calhoun, P., Clemensen, L., Johnsen, I.R. (2008). PTSD symptom clusters associated with physical health and health care utilization in rural primary care patients exposed to natural disaster. *J Traum Stress*, 21, 75-82.

Quiroga, J. & Jaranson, J.M. (2005). Politically-motivated torture and its survivors: A desk study review of the literature. *Torture,* 15, 1-111.

Rohlof, H., Knipscheer, J.W., Kleber, R.J. (2014). Somatization in refugees: A review. *Soc Psychiatry Psychiatr Epidemiol*, 49, 1793-1804. doi 10.1007/s00127-014-0877-1

Schubert, C.C. & Punamäki, R-L. (2011). Mental health among torture survivors: cultural background, refugee status and gender. *Nord J Psychiatry*, 65, 175–182.

Shoeb, M., Weinstein, H., Mollica, R. (2007). The Harvard Trauma Questionnaire: Adapting a cross-cultural instrument for measuring torture, trauma, and posttraumatic stress disorder in Iraqi refugees. *Int J Soc Psychiatry*, 53, 447-463.

Slobodin, O. & de Jong, J.T.V.M. (2015). Mental health interventions for traumatized asylum seekers and refugees: What do we know about their efficacy? *Int J Soc Psychiatry*, 61, 17-26.

Steel, Z., Chey, T., Silove, D., Marnane, C., Bryant, R.A., van Ommeren, M. (2009). Association of torture and other potentially traumatic events with mental health outcomes among populations exposed to mass conflict and displacement: A systematic review and meta-analysis. *JAMA*, 302, 537-549.

United Nations (UN) (1995). *Convention against torture and other cruel, inhuman or degrading treatment or punishment.* In: Human Rights 1945 –1995. Blue book series. Volume VII: Documents. (pp. 294-300). Geneva: United Nations http://www.ohchr.org/EN/ProfessionalInterest/Pages/CAT.aspx

van Dessel, N., den Boeft, M., van der Wouden, J.C., Kleinstäuber, M., Leone, S.S., Terluin, B., Numans, M.E., van der Horst, H.E., van Marwijk, H. (2014). *Non-pharmacological interventions for somatoform disorders and medically unexplained physical symptoms (MUPS) in adults (Review).*The Cochrane Collaboration. Hoboken (NJ): John Wiley & Sons.

Van Ommeren, M., Sharma, B., Sharma, G., Komproe, I., Cardena, E., de Jong, J.T.V.M. (2002). The Relationship Between Somatic and PTSD Symptoms Among Bhutanese Refugee Torture Survivors: Examination of Comorbidity With Anxiety and Depression. *J Traum Stress*, 15, 415–421

Wind, T.R., van der Aa, N., de la Rie, S., Knipscheer, J. (2017). The assessment of psychopathology among traumatized refugees: Measurement invariance of the Harvard Trauma Questionnaire and the Hopkins Symptom Checklist-25 across five linguistic groups, *Eur J Psychotraumatology*, 8, sup2, 1321357, DOI: 10.1080/20008198.2017.1321357.