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GENDER DIFFERENCES IN THE SYMPTOMATOLOGY OF POSTTRAUMATIC STRESS DISORDER AMONG SYRIAN REFUGEES SETTLED IN A CAMP IN TURKEY

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SUMMARY

Background: *This study firstly described gender differences in traumatic experiences and the symptomatology and posttraumatic stress disorder (PTSD), among Syrian refugees settled in a camp in Turkey. Secondly, we aimed to discuss the reasons for gender differences, by comparing with the studies conducted on these Syrian refugees of the same culture who are the victims of the same war in their new settlement where they had been forced to migrate.*

Subjects and methods: *This cross-sectional study was carried out on 352 refugees, randomly selected from a single settlement. The diagnosis of PTSD was performed using face-to-face psychiatric interviews according to the DSM-IV-TR criteria. The Stressful Life Events Screening Questionnaire and a sociodemographic history form were administered to all participants. We compared our results with other PTSD studies on Syrian Refugees.*

Results: *Men were exposed to traumatic events 1.29 times more frequently than women. However, the prevalence of PTSD was significantly higher in women (44.1%) than in men (18.1%), with a prevalence of 30.7% in the overall sample. While symptoms of intrusion and avoidance/numbing were more prevalent in women with PTSD, there was no difference in symptoms of hypervigilance between genders. However, women reported a higher prevalence of fear response to traumatic events.*

Conclusions: *Female refugees may be more prone than men to develop PTSD, although both genders shared the same traumatic environment in the early post-traumatic periods. The higher frequency of intrusion and avoidance/numbing may originate from an increased tendency of anxiety structural dissociation among women, alongside possibly higher peritraumatic dissociation, which may be also boosted by the higher ongoing perception of threat among female refugees. The possible role of peritraumatic and ongoing dissociation in PTSD should be taken into consideration for further research, particularly among populations under ongoing threat.*

Key words: *posttraumatic stress - gender differences - Syrian refugees – war - tent city*

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INTRODUCTION

Since 2011, the civil war in Syria has caused a massive wave of migration and more than 5.6 million people have been forced to leave, taking refuge in several countries, notably Lebanon, Turkey and Jordan (according to the United Nations High Commissioner for Refugees [UNHCR], 2017, 2019). There are currently more than 3.5 million registered Syrian refugees in Turkey (UNHCR, 2019). A study conducted on Syrians in Metropolitan Atlanta yielded that 96% of Syrian refugees experienced at least one traumatic event (M'zah et al. 2019). Among Syrian refugees in Lebanon, the prevalence of PTSD was 27.2% (Kazour et al. 2017). In Turkey, these figures were found to be 33.5%, based on psychiatric interviewing according to DSM-IV, and 83.4% based on cut-off values of Impact of Event Scale-Revised (Acarturk et al. 2018, Alpak et al. 2015).

Women seem to be more likely to develop PTSD than men after a traumatic experience (Tolin & Foa 2006), as was also observed in populations exposed to war trauma (Ai et al. 2002, Ekblad et al. 2002). Women's higher risk of certain types of trauma (e.g., rape, loss of spouse) has been suggested as the cause of the higher tendency to develop PTSD (Ekblad et al. 2002). Approximately half of the refugees in the world are women, and they are particularly vulnerable to the effects of human trafficking and other illegal activities (Sam & Berry 2006).

Although some studies have suggested that PTSD symptom expression was similar in women and men (Chung et al. 2018), others have suggested that PTSD symptoms differ between genders (Ibrahim & Hassan 2017). There is no consensus about the role of the heightened prevalence of certain trauma types on the increased tendency of developing PTSD among women (Tolin & Foa 2006). Social and gender roles, cognitive factors, biological determinants and social factors, have been proposed as dimensions of multifactorial etiology (Breslau 2002). Culture has also been proposed as a factor, e.g. PTSD is seen more frequently in patriarchal populations (Norris & Slone 2007). For people suffering from the negative, incompatible aspects of trauma,

cultures provide many alternative ways to improve and integrate extreme stress experiences. Many cultural factors, such as shamans, traditional medical practices, medical women and men, culture-specific rituals, traditional healers and community-based practices that offer social and emotional support, are also cultural factors that can affect PTSD development and gender differences (Wilson 2007).

The determination of whether there are gender differences in PTSD symptom expression is considered important for the evaluation and clinical management of patients with this disorder (Stenmark et al. 2014). Indeed, one of the ways to investigate the reasons for this difference between genders in proneness to develop PTSD, is making comparisons at the symptoms level, as they provide clues about potential response types (Birkeland et al. 2017, Kobayashi & Delahanty 2013).

Firstly, we aimed to investigate the relationship between trauma characteristics of Syrian refugees in Turkey after the war experiences in Syria, and the gender differences in prevalence and symptom distribution of PTSD. Secondly, as mentioned above, assuming social and gender roles, cognitive factors, biological determinants, culture, social factors differ in terms of PTSD symptoms in genders, do the PTSD studies conducted on these Syrian refugees of the same culture, who are the victims of the same war, show similar or different results in their new settlement where they have been forced to migrate. It was aimed to discuss the reasons by systematically comparing the studies conducted in the same population.

SUBJECTS AND METHODS

Participants and procedures

The study was conducted in April and May 2013 in a camp ("tent city") located in the Gaziantep Province of Turkey, where Syrian refugees had been placed temporarily. The study was approved by the Gaziantep University Ethics Committee. The age range of the population in the camp (n=4065) was between 18 and 65. Power analysis for the study yielded a sample size of 352, with a margin of error of 5%, confidence level of 95% and an expected trauma disorder percentage of 50%. Participant candidates were determined using an electronic tool of randomization and a list of people living in the camp, sorted by age. Interviews with Syrian refugees were carried out by a male psychiatrist (E.S.), himself being a native Arabic speaker. A Structured Clinical Interview for DSM-IV Axis I disorders (SCID I) was performed in those interviews. The aim of the study was explained to the participants and written informed consent was obtained from all participants, before they were included in the study.

We searched PubMed using the terms 'Posttraumatic stress' and 'Syrian refugees' in the title/abstract on 8 August 2020. The search engine found 29 articles. We excluded reviews, intervention and treatment studies, and specific studies that not focused on any gender differences from 29 studies. We also eliminated our work, which is part of our larger research project (Alpak et al. 2015). 16 articles were selected, each of which examined and discussed the gender differences. The results in these articles were compared with our results.

Assessment measures

A face-to-face diagnostic psychiatric interview was carried out by a male psychiatrist (E.S.) to screen PTSD according to the DSM-IV-TR criteria (First et al. 2004) using SCID I. The Stressful Life Events Screening Questionnaire determines the degree of traumatic events experienced by people (Stamm et al. 1996). Based on this scale, a form consisting of 14 questions was created by the authors covering possible traumatic events experienced by refugees. The form was filled out by a psychiatrist (E.S.) by asking the participants questions with options of yes/no answers. In the Sociodemographic History Form, we collected participants' age, gender, marital status, number of children, number of cohabitants in the tent, duration of immigration (in months), occupation, education level, smoking status, use of alcohol/substances, history of psychiatric disorders, prior/current use of psychiatric medicine and family history of psychiatric disorders.

Statistical analysis

Descriptive statistics were reported as frequency, percentage, mean, standard deviation and minimum-maximum values. Differences between categorical variables in the groups were analyzed with the Chi-square test. Normality assessment of the continuous variables was performed with the Kolmogorov-Smirnov and Shapiro-Wilk tests. Comparisons of normally distributed variables were made with Student's t-test. Comparisons of non-normally distributed variables were made with the Mann-Whitney U test.

RESULTS

Table 1 presents the sociodemographic data of all 352 refugees by gender. Both genders were equally represented. There was no significant difference between women (34.53±12.01) and men (36.50±11.66) on age (p=0.121). Fewer women than men were employed. Men were significantly more likely than women to be educated and smokers. Women had a greater likelihood of a family history of psychiatric disorders than men. There were no differences between men and women in the number of children (women: 3.80±2.78, men: 3.63±3.25, p=0.604), the number of cohabitants (women: 6.06±2.50, men: 6.10±2.39, p=0.896), or duration of the asylum in months (women: 6.59±2.86, men: 6.03±2.72, p=0.063).

Table 1. Sociodemographic data of refugees by gender (n=352)

	Women (n=170) n (%)/mean±SD	Men (n=182) n (%)/mean±SD	t	p
Marital Status			0.021	0.886
Married	145 (85.3)	150 (82.4)		
Single	19 (11.2)	32 (17.6)		
Divorced/Widow	6 (3.5)	0 (0)		
Occupation			306.31	*<0.001***
Not working	19 (11.2)	3 (1.6)		
Laborer	0 (0)	82 (45.1)		
Civil servant	2 (1.2)	24 (13.2)		
Student	3 (1.8)	16 (8.8)		
Housewife	141 (82.9)	0 (0)		
Shopkeeper	0 (0)	17 (9.3)		
Other	5 (2.9)	40 (22.0)		
Education			37.44	*<0.001***
Illiterate (0 years)	47 (27.6)	19 (10.4)		
Literate (0 years)	10 (5.9)	5 (2.7)		
Primary school (1–6 years)	68 (40.0)	60 (33.0)		
Secondary school (7-9 years)	27 (15.9)	48 (26.4)		
High school (9-12 years)	14 (8.2)	26 (14.3)		
University (>12 years)	4 (2.4)	24 (13.2)		
Smoking			116.47	*<0.001***
No	154 (90.6)	63 (34.6)		
Yes	16 (9.4)	119 (65.4)		
Alcohol consumption			2.82	0.093
No	170 (100)	179 (98.4)		
Yes	0 (0)	3 (1.6)		
Psychiatric history			1.07	0.300
No	169 (99.4)	182 (100)		
Yes	1 (0.6)	0 (0)		
Medical problems			0.01	0.918
No	146 (85.9)	157 (86.3)		
Yes	25 (14.1)	25 (13.7)		
Family history of psychiatric disorder			4.43	*0.035**
No	160 (94.1)	179 (98.4)		
Yes	10 (5.9)	3 (1.6)		
Substance abuse				1.000
No	170 (0)	182 (0)		
Yes	0 (0)	0 (0)		

* $p<0.05$; ** $p<0.001$

Table 2 presents the frequency of various traumatic events experienced by Syrian refugees and their distribution according to gender. Having experienced a region affected by war was the most common traumatic event for both genders. More men than women saw and touched dead bodies apart from funerals, felt responsible for someone's death or severe injury, experienced or witnessed torture or beating, and experienced/witnessed a serious accident or injury. After a detailed psychiatric interview using DSM-IV-TR diagnostic criteria, 108 (30.7%) participants were diagnosed as having PTSD. Overall, a higher percentage of women were diagnosed with PTSD than men (44.1% vs. 18.1%, $p<0.001$). Men experienced a higher average number of traumatic events (4.32±1.83, min: 0, max: 8) than women (3.57±1.57, min: 0, max: 7) ($p<0.001$).

Analysis of the 17 DSM-IV PTSD symptoms both in the overall group and in those participants with PTSD are presented in Table 3. There was no significant difference between genders in the frequencies of the DSM-IV criterion A1 (i.e., had been exposed to a traumatic event) for PTSD. However, A2 (their response involved intense fear, helplessness, and/or horror) was significantly more prevalent among women than men. There was no significant difference in nightmares (B2), difficulty sleeping (D1), or irritability (D2) between genders. All remaining DSM-IV PTSD symptoms were significantly more prevalent in women than men. In participants diagnosed with PTSD, nightmares (B2), physiological reactivity (B5), avoidance of thoughts (C1), avoidance of places (C2), foreshortened future (C7) and exaggerated startle (D5), were significantly more prevalent in women than men.

Table 2. The frequency of traumatic incidents and their distribution by gender (n=352)

Traumatic Incidents	Women (n=170) N (%)/mean±SD	Men (n=182) N (%)/mean±SD	χ^2	p
Experienced/witnessed a life-threatening disease of a close friend or a family member	22 (12.9)	17 (9.3)	1.15	0.282
Experienced/witnessed the death of a spouse/child	8 (4.7)	4 (2.2)	1.67	0.195
Experienced/witnessed the death of a close friend or a family member (except spouse/child)	123 (72.4)	145 (79.7)	2.59	0.108
Experienced/witnessed the abduction or being taken hostage of a close friend or a family member	98 (57.6)	103 (56.6)	0.04	0.842
Experienced/witnessed a close friend's or family member's torture	90 (52.4)	90 (49.5)	0.42	0.513
Had been in a region that is affected by war	165 (97.1)	173 (95.1)	0.92	0.336
Saw and touched dead bodies apart from funerals	82 (48.2)	136 (74.7)	26.16	*<0.001***
Felt responsible for someone's death or severe injury	0 (0)	5 (2.7)	4.73	*0.030**
Experienced torture or beating	0 (0)	28 (15.4)	28.41	*<0.001***
Witnessed torture or beating	19 (11.2)	71 (39.0)	35.7	*<0.001***
Experienced/witnessed a serious accident or an injury	0 (0)	14 (7.7)	13.61	*<0.001***
Experienced/witnessed the exposure of a close friend or a family member to radiation or chemical weapons	0 (0)	0 (0)		1.000
Experienced sexual violence	1 (0.6)	0 (0)	0.93	0.333
Witnessed sexual violence	0 (0)	0 (0)		1.000

* $p<0.05$; ** $p<0.001$

DSM-IV PTSD symptom clusters and mean numbers of traumatic events are presented in Table 4. According to the regression analysis conducted on the number of traumatic events experienced by gender, men were exposed to 1.29 times more trauma (OR 1.29 [95% CI 1.14–1.46] $p<0.001$). In the overall sample, women reported higher mean scores on all PTSD symptom clusters (intrusion, avoidance/numbing, hypervigilance) compared to men. Among those diagnosed with PTSD, women reported higher mean scores of intrusion and avoidance/numbing than men. However, no association was found between gender and the cluster of hypervigilance.

DISCUSSION

This study investigated gender differences in traumatic experiences and the symptomatology of posttraumatic stress disorder (PTSD) among Syrian refugees. We found that men were more frequently exposed to traumatic events than women, although the prevalence of PTSD was significantly higher in women (44.1%) than men (18.1%). From the point of symptomatology, it was observed that the intrusion and avoidance/numb symptoms, were more common in women with PTSD and the symptoms of hypervigilance didn't differ between genders. Another noticeable result is the higher prevalence of fear response to traumatic events in women.

Although the lifelong prevalence of PTSD is estimated to be two times higher in women than in men, it has been reported that men experience more frequent traumatic experiences than women during their lifetime (Frans et al. 2005). In a quantitative review of 25 years of research, Tolin & Foa reported that female participants had a higher PTSD prevalence, although adult male participants were more likely to report traumatic experiences among all trauma types, including 'Combat, war, or terrorism' (Tolin & Foa 2006). When we focus on the studies on PTSD among Syrian refugees, we are able to summarize the differences below. It should be emphasized that other studies did not directly focus on PTSD sub-symptom differences, but rather trauma exposure and PTSD rates were examined (Table 5).

Most of the studies found no significant differences between men and women in terms of PTSD prevalence (Georgiadou et al. 2018, Ibrahim & Hassan 2017, Kazour et al. 2017, Mahmood et al. 2019, Tinghög et al. 2017, Vallières et al. 2018). However, men reported more traumatic experiences than women similar to our study in two studies by Mahmood et al. and Hawkar et al. Both were conducted in the Kurdistan region of Iraq, in the Arbat camp. Two studies conducted in Erlangen, Germany, are consecutive follow-up studies. In those studies, Syrian refugees had a residence permit, resided in the city of Erlangen and received unemployment benefits, but found no differences between genders in terms of PTSD again (Borho et al. 2020, Georgiadou et al. 2018). However, when viewed in terms of different symptoms, they found that women had a significantly higher severity of depression and generalized anxiety than men, and the female gender was a significant predictor for GAD symptoms. The data of all four studies were made in 2014 and later. We stated this to emphasize that the date of the study is important in terms of time after trauma and effect. As a matter of fact,

Table 3. Analyses of the DSM-IV PTSD symptoms in women and men with PTSD (n=352)

Symptoms	Full Sample				Diagnosis with PTSD			
	Women (n=170) n (%)	Men (n=182) n (%)	χ^2 (df=1)	p	Women (n=75) n (%)	Men (n=33) n (%)	χ^2 (df=1)	p
The person's has been exposed to a traumatic event (A1)	168 (98.8)	175 (96.2)	2.51	0.113	75 (100)	33 (100)		1.000
The person's response involved intense fear, helplessness, or horror (A2)	159 (93.5)	144 (79.1)	15.22	*<0.001***	75 (100)	33 (100)		1.000
Intrusive thoughts (B1)	143 (84.1)	125 (68.7)	0.72	0.394	75 (100)	33 (100)		1.000
Nightmares (B2)	80 (47.1)	37 (20.3)	19.32	*<0.001***	68 (90.7)	23 (69.7)	7.590	*0.006**
Flashbacks (B3)	60 (35.3)	32 (17.6)	8.60	*0.003**	57 (76.0)	23 (69.7)	0.474	0.491
Distressed by reminders (B4)	96 (56.5)	64 (35.2)	7.69	*0.006**	74 (98.7)	33 (100)		1.00[a]
Physiological reactivity (B5)	71 (41.8)	32 (17.6)	16.94	*<0.001***	62 (82.7)	20 (60.6)	6.102	*0.014**
Avoids thoughts (C1)	46 (27.1)	11 (6.0)	22.43	*<0.001***	43 (57.3)	9 (27.3)	8.295	*0.040**
Avoids places (C2)	95 (55.9)	45 (24.7)	24.69	*<0.001***	75 (100)	30 (90.9)		*0.027[a]**
Memory lapses (C3)	19 (11.2)	3 (1.6)	10.92	*0.001**	17 (22.7)	3 (9.1)	2.799	0.094
Anhedonia (C4)	101 (59.4)	71 (39.0)	6.22	*0.013**	74 (98.7)	32 (97.0)		0.520[a]
Feelings of detachment (C5)	50 (29.4)	27 (14.8)	6.42	*0.011**	44 (58.7)	22 (66.7)	0.617	0.432
Emotionally numb (C6)	63 (37.1)	32 (17.6)	10.63	*0.001**	59 (78.7)	25 (75.8)	0.112	0.738
Foreshortened future (C7)	75 (44.1)	39 (21.4)	12.99	*<0.001***	69 (92.0)	22 (66.7)	11.089	*0.001**
Difficulty sleeping (D1)	102 (60.0)	91 (50.0)	0.03	*<0.001***	69 (92.0)	33 (100)		0.174[a]
Irritability (D2)	95 (55.9)	75 (41.2)	1.80	0.179	61 (81.3)	26 (78.8)	0.095	0.758
Difficulty concentrating (D3)	102 (60)	65 (35.7)	11.04	*0.001**	72 (96.0)	31 (93.9)		0.640[a]
Hypervigilance (D4)	89 (52.4)	33 (18.1)	34.33	*<0.001***	71 (94.7)	27 (81.8)		0.065[a]
Exaggerated startle (D5)	118 (69.4)	54 (29.7)	41.50	*<0.001***	74 (98.7)	29 (87.9)		*0.030[a]**

[a]Fisher's exact test, * p<0.05; ** p<0.001

Table 4. DSM-IV PTSD symptom clusters and mean numbers of traumatic events in women and men (n=352).

	Full Sample				Diagnosis with PTSD			
	Women (n=170) mean±SD	Men (n=182) mean±SD	t	p	Women (n=170) mean±SD	Men (n=182) mean±SD	t	p
Mean number of traumatic events (0-8)	3.57±1.57	4.32±1.83	4.15	*<0.001***	4.16±1.30	5.45±1.03	5.04	*<0.001***
Intrusion (0-5)	4.64±1.89	1.59±1.61	5.59	*<0.001***	4.48±0.81	4.00±1.08	2.26	*0.028**
Avoidance/Numbing (0-7)	2.64±2.36	1.25±1.68	6.30	*<0.001***	5.08±1.07	4.33±0.92	3.46	*0.001**
Hypervigilance (0-5)	2.97±1.92	1.74±1.78	6.22	*<0.001***	4.62±0.63	4.42±0.90	1.16	0.249

* p<0.05; ** p<0.001

Table 5. Literature review of studies conducted with Syrian refugees and comparison of gender differences in terms of PTSD

Article	Country	N	Assessment tools	PTSD prevalence	Mean Age	Date	Resident	Interviewer	Results regarding gender difference
(Mahmood et al. 2019)	Kurdistan region of Iraq	494 married couples	Kurdish Kurmanji and Arabic versions of post-traumatic stress disorder Checklist for DSM-5	60%	34.6	Between December 2016 and July 2017	In Arbat Camp they had received a shelter with some basic furniture	A team: a clinical psychologist and a social worker either male or female, with the participant matched by gender.	Men reported more traumatic experiences than women No significant differences were found between men and women in terms of PTSD symptomatology In a multivariate regression, gender (being female) was confirmed as predictor of PTSD
(Acarturk et al. 2020)	Istanbul/ Turkey	1678	Posttraumatic Stress Disorder Checklist The Hopkins Symptoms Checklist	19.6%	34	February and May 2018	Registered refugees living in Sultanbeyli	Self-report data	No significant differences were found between genders in terms of PTSD symptoms In regression analysis, being female was predicted to PTSD
(Tinghög et al. 2017)	Sweden on grounds of asylum	1215	Harvard Trauma Questionnaire and WHO-5 Well-being Index	29.9%	Max range 30-39	Between 2011 and 2013.	Data from TPR (A nationwide register covering all individuals with permanent residency)	Self-report data	Mental ill health found to be more common among women without possible PTSD. Anxiety and depression found to be more common among women
(Ibrahim & Hassan 2017)	The Kurdistan Region of Iraq	91	Harvard Trauma Questionnaire, sections I, IV, and V	Between 35%-%38	29.9	Between January and March, 2014	Syrian Kurdish refugees in the Arbat camp in the Sulaymaniyah Governorate	Self-report data	Men reported having experienced more traumatic event types than women Men and women did not show any significant differences in their levels of PTSD symptoms
(Gottvall et al. 2019)	Sweden 2011-2013	1215	ENRICHD Social Support Inventory Harvard Trauma Questionnaire	29.9%	N/A	Between 2011 and 2013	Refugees with granted permanent residency in Sweden	Self-report data	Social support works similarly for both refugee women and men. No significant gender differences were found in PTSD rates
(Borho et al. 2020)	Erlangen / Germany	108 of 200	Essen Trauma Inventory, Patient Health Questionnaire Generalized anxiety disorder (GAD-7).	13.9% in 2017 13% in 2019	36.9	2017- 2019 follow up for 1.5 years	Syrian refugees with residence permission in Germany living İn Erlangen	Self-Report Data	It has been found that the psychological burden (depression, PTSD, generalized anxiety disorder) on the refugee population remained consistently high over time, despite partially improved living conditions
(Kazour et al. 2017)	Lebanon	452	Mini International Neuropsychiatric Interview	27.2%	35	N/A	6 Camps Of Central Bekaa Region	One of the interviewers after being presented by an IMC staff. (spoke Arabic, the mother tongue)	No significant differences in characteristics, including gender, were found between participants with and without current PTSD.
(Vallières et al. 2018)	Lebanon	112	International Trauma Questionnaire (ITQ)	Complex PTSD (36.1%) PTSD (25.2%)	33	June 2016	12.7%, n = 14 resided in a refugee camp 96.4%, n = 107 residing with family members	MC psychotherapists were conducted face-to-face in English, recorded and transcribed verbatim by the research team.	No sex or age differences were found at the prevalence or symptomatic levels of PTSD or complex PTSD
(Georgiadou et al. 2018)	Erlangen/ Germany	200	Essen Trauma Inventory Patient Health Questionnaire- Depression Module (PHQ-9) An Arabic version of the 7-item Generalized Anxiety Scale	11.4%	33.3	2017	Syrian refugees who arrived in Germany after 2014 and were resident in the city of Erlangen, receiving unemployment benefits and in possession of a residence permit.	Self-reported	No significant differences were found between women and men with regard to the occurrence of PTSD symptoms or the prevalence of PTSD. Women found to have higher severity of depression and generalized anxiety than men significantly and female gender found to be a significant predictor for GAD symptoms.

Table 5. Continuous

Article	Country	N	Assessment tools	PTSD prevalence	Mean Age	Date	Resident	Interviewer	Results regarding gender difference
(Acarturk et al. 2018)	Turkey	781	The Impact of Event Scale-Revised	83.4%	35.2	March and May 2013	Eligible participants were recruited from the treatment-seeking adult refugees who applied	Twelve trained interviewers fluent in Arabic	Female sex found to be positively correlated with PTSD and depression. Being female found to increase the risk of symptoms of PTSD
(Beni Yonis et al. 2020)	Jordan	1773	The Child Post-TraumaticStressDisorder Symptom Scale	31%	14.5	2018	12–18 years who were registered in 2018 in schools of four cities;	Self-reported	PTSD prevalence found to be higher in female adolescents compared with males. Female adolescents were significantly more likely to have moderate to severe PTSD
(Duren & Yalçın 2020)	Turkey	321	Multidimensional Scale of Perceived Social Support Children's Impact of Event Scale Strengths and Difficulties Questionnaire	53.7%	13.8	September 2018	12- to 18-year-old Syrian refugee adolescents attending a non-governmental organization (NGO) governed school in Istanbul	Self-reported	Female participants reported significantly lower levels of social trust. No significant difference was found between genders in the MSPSS, CRIES and SDQ total scores. Female participants reported higher levels of emotional problems according to SDQ
(Strømme et al. 2020)	Lebanon and Norway	827	In two different migration phases: Hopkins Symptom Checklist Harvard Trauma Questionnaire	7%	33	2017–2018	in a transit setting and in a recipient country	The majority were Arabic speakers, with a 12% Kurmanji speaking minority One in four reported to have passed a transit country and more than one quarter had migrated alone	Women more frequently reported musculoskeletal complaints
(Braun-Lewensohn & Al-Sayed 2018)	Europe	110	Achenbach Youth Form	N/A	15.4	May-July 2017	Forty-eight participants (43.6%) had lived in the refugee camp for up to 6 months, while 62 (56.4%) had lived in the camp between 6 months and 2 years	Self-report questionnaires that asked about demographics, Achenbach Youth Form	Females rated their situation as more dangerous and reported more signs of internalization, externalization, and post-traumatic stress symptoms. Males reported more exposure to war experiences
(Basheti et al. 2019)	In Amman, Jordan	186	Arabic version of the Harvard Trauma Questionnaire	38.7%	31.5	January-October, 2014	38.7% categorized to have PTSD	Three trained pharmacists who attended a 2-day training program concerning the study purpose	Females were found to experience less PTSD than males. Males reported significantly worse PTSD symptoms.

in the follow-up study of Georgiadou et al. by Borho et al., it was noted that the psychological burden on this refugee population remained consistently high over time, despite partially improved living conditions (Borho et al. 2020). While the female gender significantly predicted stronger symptoms of PTSD at the beginning of the study, no such effect was found in terms of gender at the follow-up (Borho et al. 2020). Although Mahmood et al. and Acarturk et al. found no gender differences in terms of PTSD prevalence, they also found that being female was a predictor of PTSD in regression analysis (Acarturk et al. 2021, Mahmood et al. 2019). Other two studies were conducted in the very same population in Sweden, in the context of asylum seekers, between 2011 and 2013 (Gottvall et al. 2019, Tinghög et al. 2017). Gottvall et al. reported that, while social support partially mediated the impact of torture on PTSD, gender didn't moderate this pattern. Petter et al. reported that anxiety and depression were more common among women.

Although there is more evidence to the contrary in our study, we found that PTSD symptoms were not examined specifically and that the female gender was differentiated in symptoms such as anxiety and depression and/or prediction of PTSD, in regression analysis. Besides, Yonis et al. found that PTSD prevalence was higher in female adolescents compared with males, while Acartürk et al. (2018) found that being female increased the risk of symptoms of PTSD, like our previous study (Acarturk et al. 2018, Alpak et al. 2015, Beni Yonis et al. 2020). Only one study found that females had less PTSD than males (Basheti et al. 2019). The higher PTSD symptoms in the female gender in studies conducted with adolescents (Beni Yonis et al. 2020, Duren & Yalçın 2020) suggest that the average age may also affect the results.

In the present study, when we focus on PTSD symptoms specifically, concerning the A2 criterion of PTSD, women were more likely to experience fear, helplessness and horror than men, when exposed to a traumatic event. Considering the stress sensitivity framework, the higher A2 criteria in women suggest that the anxiety level is also high. Although no gender difference was found in terms of PTSD prevalence in 3 studies (all three are self-reported data) in our review (Borho et al. 2020, Georgiadou et al. 2018, Tinghög et al. 2017), the higher incidence of anxiety disorder in women reveals the importance of evaluation in structured interviews. Similarly, the symptoms of B2, nightmares, B5, physiological reactivity, C1, efforts to avoid thoughts, C2, efforts to avoid activities, C7, foreshortened future and D5, excessive startle response that are characterized by anxiety related to presence and future, were statistically more frequent in women. Also, this finding seems to represent the effect of still living under the ongoing threat, which has been the origin of the overall traumatic experience of being exposed to war and social disruption. When we review the dates when the data was collected, the early collection of our data like the study by Acarturk et al. (2018) supports this conclusion. However, initial data appears to have been collected in two studies by Tinghög et al. and Gotvall et al., between 2011 and 2013. Although no gender difference was observed in PTSD in these studies, it was observed that anxiety was higher in women in the study by Tinghög et al, and Gottvall et al. focused on social support rather than symptoms in their study. The reason for this difference may be the fact that both studies were conducted not in the camp, but on refugees who were granted permanent residence in Sweden. Perhaps the development of PTSD did not differ in terms of gender, with the reduction of uncertainty with the acquiring of a settlement permit.

As seen in Table 5, findings in Syrian refugees were not analyzed based on the symptomatology of PTSD. As a result, we added other PTSD studies to the discussion. Higher scores on intrusion and avoidance/numbing dimensions among women, suggested the presence of an increased "bimodal" emotional response, i.e., while intrusion represented under modulation of emotions, avoidance/numbing represented the opposite stance: over modulation. Thus, in the present study, these two contrasting types of coping with emotions were sharpened among women, rather than being distributed between two genders. This pattern may originate from an increased tendency of structural dissociation among women (Nijenhuis et al. 2006). The same factor may have operated as elevated levels of peritraumatic dissociation among women as a predictor of PTSD (Şar 2011). Traumatized women reported somatization and dissociation more frequently, while men rather responded with arousal and anger (Christiansen & Elklit 2012). The present study suggests that the relationship between gender and emotion modulation in PTSD may differ, depending on the conditions the subject is exposed to. Among these, the ongoing threat appears to be one of the most powerful factors.

In terms of limitations, first of all, the aim of the study was circumscribed, as it was strictly devoted to PTSD. Response to traumatic experiences may cover a broader spectrum of symptomatology (Şar 2011). Also, the present study was cross-sectional, in which the fluctuations of symptoms and the effect of adaptation cannot be assessed, something which can only be achieved in a longitudinal study. The findings cannot be generalized to all Syrian refugees in Turkey because the study was conducted in only one group and among those who reside in a camp. Moreover, the study was carried out while the traumatic process was still ongoing, though this is one of its unique features. Last but not least, the study lacked the scales that measure the severity of PTSD symptoms and a standardized questionnaire for PTSD did not exist yet in the Arabic language when the study was carried out. Also, DSM-5 based structured interviews had not been adapted to Turkish and the Arabic language yet, so DSM-IV was

used. The strength of the present study was the use of a clinical psychiatric interview, which was conducted by a psychiatrist who was fluent in the Arabic language and who grew up in a nearby culture.

CONCLUSION

Female refugees may be more prone than men to develop PTSD, especially in the early post-traumatic periods, although both genders shared the same traumatic environment. The higher frequency of intrusion and avoidance/numbing among women may originate from their increased tendency of anxiety and structural dissociation, possibly also in the form of peri-traumatic dissociation due to the ongoing perception of threat. Thus the elevated prevalence of PTSD and increased level of fear among female refugees living in a camp, seems to be the consequence of threat. The possible role of peritraumatic and ongoing dissociation in PTSD would be a significant issue for further research, particularly in the context of gender differences in response to traumatic stress.

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Contribution of individual authors:

Eser Sağaltici: study design, data collection, first draft, approval of the final version, statistical analysis, analysis and interpretation of data for the work, approval of the final version.

Şengül Kocamer Şahin: interpretation of data, reviewing and interpretation of other studies conducted on Syrian refugees, literature review, critical review, approval of the final version.

Gökay Alpak: study design, data collection, statistical analysis.

Abdurrahman Altindag: revising manuscript critically for important intellectual content.

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