



PTSD and gender: could gender differences in war trauma types, symptom clusters and risk factors predict gender differences in PTSD prevalence?

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Abstract

The female-male ratio in the prevalence of post-traumatic stress disorder (PTSD) is approximately 2:1. Gender differences in experienced trauma types, PTSD symptom clusters, and PTSD risk factors are unclear. We aimed to address this gap using a cross-sectional design. A sample of 991 civilians (522 women, 469 men) from South Lebanon was randomly selected in 2007, after the 2006 war. Trauma types were grouped into disaster and accident, loss, chronic disease, non-malignant disease, and violence. PTSD symptom clusters involved re-experiencing, avoidance, negative cognitions and mood, and arousal. These were assessed using parts I and IV of the Arabic version of the Harvard Trauma Questionnaire (HTQ). Risk factors were assessed using data from a social support and life events questionnaire in multiple regression models. Females were twice as likely as males to score above PTSD threshold (24.3 vs. 10.4%, $p < 0.001$). Total scores on all trauma types were similar across genders. Females scored higher on all symptom clusters ($p < 0.001$). Social support, social life events, witnessed traumas, and domestic violence significantly were associated with PTSD in both genders. Social support, social life events, witnessed traumas and domestic violence were significantly associated with PTSD in both genders. Conversely, gender difference in experienced traumas was not statistically significant. These findings accentuate the need to re-consider the role of gender in the assessment and treatment of PTSD.

Keywords Gender · PTSD · Trauma types · Symptom clusters · Civilian population · South Lebanon

Introduction

Individuals residing in countries torn by violent conflicts or wars may face detrimental mental and physical consequences. The Lebanese population has witnessed armed conflicts and Israeli occupation of the South for over

20 years (United Nations Interim Force in Lebanon (UNIFIL), 2016). The most recent in July 2006 on the Lebanese-Israeli border resulted in over 1109 Lebanese civilian casualties, 4399 injuries, and over one million internally displaced persons (Bouckaert and Houry 2007). Unsurprisingly, the prevalence rates for psychiatric morbidity, including post-traumatic stress disorder (PTSD), among civilian populations in the South were found to range from 17.6 to 33.3% across different samples (Farhood and Dimassi 2012; Farhood, Dimassi, and Lehtinen 2006; Saab et al. 2003).

Post-traumatic stress disorder

Post-traumatic stress disorder is an anxiety disorder that stems from witnessing or experiencing a traumatic event (McFarlane 2000). Exposure to traumatic events, however, does not necessarily lead to PTSD (Kessler et al. 1995; Perrin et al. 2014; Simmons 2007). Interestingly, females were found to be twice

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as likely (Christiansen and Elklit 2012; Christiansen and Hansen 2015; Farhood and Dimassi 2012; Perrin et al. 2014) and even five times as likely as males (Farhood, Dimassi, and Strauss 2013) to develop PTSD, despite the fact that women were exposed to fewer traumas (de Vries and Olff 2009; Tolin and Foa 2006). Although it is well established that gender disparity exists in the prevalence of PTSD and experienced traumas, it is less clear whether this disparity holds in relation to specific trauma types or in relation to specific symptom clusters of PTSD. Furthermore, it is unclear whether these differences partially stem from specific risk factor profiles that are unique to each gender. For example, in the context of Lebanon, whereby patriarchal cultural and traditional social values prevail, females may face greater legal, religious, and social challenges as compared to their male counterparts. As a result, females may experience a unique set of risk factors that are not experienced by males. Although women in such contexts often have reservations to speak up, according to a study conducted in Lebanon, women felt that health care is an exception because it is a “socially accepted way to break the silence” and address their problems (Usta et al. 2012).

Gender differences in experienced war traumas

These gaps in the existing literature have recently encouraged researchers to investigate gender differences in relation to “trauma type,” defined as “an overarching category for a series of different individual trauma events that are related or familiar to each other through some defining similar characteristics” (Ditlevsen and Elklit 2012). Gender differences in experienced war-related traumas and trauma types have already been documented in a few studies. For example, in a sample of victims of the recent war in Croatia, female civilians frequently experienced combat exposure, civilian trauma experiences, living in a hostile environment, and war-related deprivation, such as not sleeping for over 24 hours (Ditlevsen and Elklit 2012; Stevanović, Frančišković, and Vermetten 2016).

Gender differences in the expression of PTSD

Alternatively, some researchers looked at specific symptom clusters to observe whether PTSD was expressed and perceived differently across gender (Galovski et al. 2010; Hourani et al. 2015). Some studies have found that not only are women more likely than men to experience PTSD but they also are more likely to exhibit distress in individual PTSD symptoms and in PTSD symptom clusters (Hourani et al. 2015; Tekin et al. 2016).

Risk factor profile of PTSD in women

Previous studies suggested that this gender disparity may arise from differences in associated risk factors that were existent prior to, during, and after exposure to the traumatic event

(Brewin et al. 2000; Christiansen and Elklit 2012), often leading to worsened mental health outcomes among females (Farhood et al. 2013). These findings should optimally be explored by policy makers and intervention planners to target physical, social, and psychological obstacles that women tend to face in times of severe stress and desolation.

Objectives

This study aimed to assess gender differences in (1) PTSD prevalence, (2) reported trauma types, (3) reported clusters of symptoms of trauma, and (4) risk factors associated with PTSD. The ultimate aim of this study was to draw PTSD symptom, trauma-vulnerability, and risk factor profiles characteristic of each gender. This, in turn, could maximize treatment effectiveness by tackling the individual’s unique needs and resultantly yielding longer-term treatment outcomes.

Materials and methods

Design and procedure

This study employed a cross-sectional survey design to assess war-related trauma types and clusters of symptoms of trauma among male and female civilians from South Lebanon, in addition to risk factors associated with PTSD.

This is a secondary data analysis from a sample of 991 civilians randomly selected from 10 geographically diverse villages from South Lebanon (Farhood and Dimassi 2012). The original data, collected in 2007, was used to assess the psychological impact of the July 2006 war one year later. Quotas established by the United Nations Interim Force in Lebanon (UNIFIL) (Small Arms Survey 2010) were introduced. Thus, the participants selected varied in age, gender, ethnicity, educational background, and religion. Multi-stage cluster sampling was used with the village being the first level, rural blocks being the second level, and individual households being the third and final level. Inclusion criteria were individuals aged 20 years or older and who were permanent residents of their respective villages for at least two years. The exclusion criterion involved individuals with any condition that precluded them from being interviewed, such as an inability to communicate; yet, no one in this sample fit this criterion. Thus, all 991 participants were eligible for participation in the study.

Participants were asked for oral informed consent and remained anonymous throughout the study. No financial compensation was provided for participation. The participants were interviewed in their homes and workplaces by trained graduate students from the American University of Beirut

(AUB). Ethical approval for the study protocol was granted by the AUB Institutional Review Board.

Instruments

Demographics and lifestyle variables

To assess demographic data, a questionnaire consisting of 12 questions was used. Physical activity was measured by the question: “Do you practice any physical activity?” The answers were “yes regularly,” “yes irregularly,” and “no”. The first two items were later grouped as “yes” for the analysis. Participants were also asked whether they are suffering from any health problem (yes/no).

Traumatic events and PTSD

To assess traumatic events and current symptoms of PTSD, parts I and IV of the Harvard Trauma Questionnaire (HTQ) were used. Part I addresses civilians’ exposure to war events and Part IV addresses symptoms of PTSD.

For the trauma assessment section of this questionnaire, the Arabic version of the HTQ was used whereby 25 trauma events and 16 symptoms of trauma were measured (Farhood et al. 2013). This version has previously been validated and adapted to Arabic-speaking populations (Shoeb, Weinstein, and Mollica 2007). Scoring for HTQ traumas was based on “yes” or “no” answers that were respectively coded as 0 and 1. The items were summed to yield a total score for traumas experienced (HTQ experienced) and a total score for traumas witnessed (HTQ witnessed). The section that assessed symptoms of trauma was scored on a Likert Scale (1 to 4), ranging from “Not at all” to “Extremely” respectively. The cutoff that was used was 2.5 (Mollica et al. 1992). The HTQ has an inter-rater reliability $r = 0.93$ for traumatic events, $r = 0.98$ for symptoms of trauma and one-week test-retest reliability $r = 0.89$, $p < 0.0001$ for traumatic events, and $r = 0.92$, $p < 0.0001$ for trauma symptoms (Michultka, Blanchard, and Kalous 1998). For the symptom part of the Arabic version of the HTQ, Cronbach’s alpha was calculated to be 0.87 (Farhood 2014).

For the current study’s purposes, we categorized traumatic events into three trauma types based on the existent categorization implemented by Steel et al. (1999)—detention and abuse, traumatic loss, and exposure to conflict and social upheaval. A total score consisting of the summation of item scores was computed for each trauma type.

Additionally, we categorized PTSD symptoms based on the behavioral symptoms that are proposed to accompany PTSD, as stipulated in the DSM-5. Four unique diagnostic clusters were derived: intrusion, avoidance, negative alterations in cognitions and mood, and alterations in arousal and reactivity (American Psychiatric Association 2013). A total

score for each cluster was computed by averaging the scores of the individual items in the cluster.

Social support, life events, and domestic violence

A specific section measured social support with eight items denoting availability of emotional and financial support, as well as a sense of being needed and appreciated by others. The life events section consisted of 13 questions that assessed changes in social relations and financial situation during the past year. The section on social relations had four items addressing conflicts with friends, family, or at work. The section on changes in social status had five items. Financial problems were assessed by job loss, job searching, major change in income, and payment obligations. Subjects were also asked whether they were exposed to domestic violence in the following areas: financial, social, physical, or psychological. Responses were coded as 0 for “no” and 1 for “yes”.

All of the instruments included in this study have already been validated in Arabic-speaking populations (Farhood and Dimassi 2015; Farhood and Nouredine 2003; Luxton, Skopp, and Maguen 2010; Shoeb et al. 2007).

Data analysis

Data were analyzed using SPSS version 23 for Windows (Statistical Product and Service Solutions Inc., Chicago IL). Descriptive statistics for female and male participants were derived for the study variables, using means and standard deviations for continuous variables and counts and percentages for categorical variables. Prevalence of PTSD was compared by gender using Pearson’s chi-square test. Scores on trauma types and PTSD symptom clusters were compared by gender using independent samples t tests, while differences in proportions in each item were compared using Pearson’s chi-square test. Finally, multiple logistic regression analysis was carried out to determine which factors were significantly associated with increased risk of PTSD. Significant variables at the univariate level were entered into the multivariable regression models. Odds ratios and their 95% confidence intervals were reported. Interactions between study variables and gender were considered. All tests were two tailed and conducted at the 0.05 significance level.

Results

Sample characteristics

The mean age of female participants was 41 years (SD = 16.3) (Table 1). Approximately 61.3% had less

Table 1 Sample characteristics of female ($N = 522$) and male ($N = 469$) participants

Variable	Total N (%)	Female N (%)	Male N (%)	p value
Above PTSD threshold	176 (17.8)	127 (24.3)	49 (10.4)	< 0.001
Age group, years				
20–29	305 (30.8)	153 (29.3)	152 (32.4)	
30–39	263 (26.5)	135 (25.9)	128 (27.3)	
40–49	168 (17.0)	95 (18.2)	73 (15.6)	
50–59	108 (10.9)	60 (11.5)	48 (10.2)	
60+	147 (14.8)	79 (15.1)	68 (14.5)	ns
		41.1 (16.3)		
Marital status				
Never married	333 (33.5)	157 (30.1)	176 (37.5)	
Ever married	658 (66.5)	365 (69.9)	293 (62.5)	0.013
Education				
Not completed secondary	613 (61.9)	320 (61.3)	293 (62.5)	
Completed secondary and above	378 (38.1)	202 (38.7)	176 (37.5)	ns
Employment				
Employed	453 (45.7)	124 (23.8)	329 (70.1)	
Unemployed/housewife/other	538 (54.3)	398 (76.2)	140 (29.9)	< 0.001
Health problems	332 (33.5)	191 (36.6)	141 (30.1)	0.03
Physical activity	261 (26.3)	99 (19.0)	162 (34.6)	< 0.001
Domestic violence	91 (9.2)	54 (10.3)	37 (7.9)	ns
Displacement	705 (77.1)	391 (74.9)	314 (67.0)	0.006
Sufficient income to meet basic needs				
Needs not met	424 (42.8)	217 (44.6)	207 (44.1)	
Most needs met	363 (36.6)	203 (38.9)	160 (34.1)	
All needs met	204 (20.6)	102 (19.5)	102 (21.7)	ns
Cigarette use	311 (31.4)	119 (22.8)	192 (40.9)	< 0.001
Tranquilizer use	96 (9.7)	58 (11.1)	38 (8.1)	ns
	Mean (SD)	Mean (SD)	Mean (SD)	p value
Social support (0–8) mean (SD)	6.25 (1.53)	6.42 (1.48)	6.06 (1.58)	< 0.001
Life events (0–4)	0.33 (0.67)	0.35 (0.70)	0.29 (0.64)	ns
Financial life events (0–4)	1.69 (0.97)	1.50 (0.94)	1.90 (0.97)	< 0.001
HTQ experienced	4.46 (2.43)	4.56 (2.45)	4.36 (2.40)	ns
HTQ witnessed	5.18 (2.57)	5.23 (2.48)	5.13 (2.66)	ns

than a primary education; 76% were either unemployed, housewives, or any other employment status; and the majority (66.5%) were married. Health problems were reported by 36.6%, physical activity by 10.3%, and displacement by as many as 74.9% of the sample. Furthermore, almost half (44.6%) reported that they did not have a sufficient income to meet their basic needs. Cigarette and tranquilizer use were reported by 22.8 and 11.1% of the participants, respectively. Compared to males, a significantly higher proportion of females were married, unemployed, had health problems, did not exercise, were displaced, and were non-smokers. Also, females had a significantly higher social support score and less financial problems than males. In addition, the proportion of females scoring above the

PTSD threshold was approximately twice that of males (24.3 vs. 10.4%, $p < 0.001$).

Gender differences in experienced trauma types

Under “detention and abuse,” a significantly higher proportion of males reported having “suffered ill health without access to medical care” (58.2 vs. 25.3%, $p = 0.008$) and being “imprisoned or taken as a hostage” (1.3 vs. 0.2%, $p = 0.041$) (Table 2). No significant gender differences were observed in the “traumatic loss” items. Under “exposure to conflict and social upheaval,” the proportion of females reporting being “forced to hide” was significantly higher than that of males (59 vs. 53%, $p = 0.045$). Total scores on the three trauma types were similar across gender.

Table 2 Gender differences in experienced trauma types

HTQ item	Trauma type	Males (%)	Females (%)	<i>p</i> value
<i>Detention and human rights abuses</i>				
2	Suffered ill health without access to medical care	86 (58.2)	132 (25.3)	0.008
4	Imprisoned or taken as a hostage	6 (1.3)	1 (0.2)	0.041
5	Physically harmed	11 (2.3)	7 (1.3)	0.237
7	Brainwashed	0	0	*
8	Sexually abused or raped	2 (0.4)	1 (0.2)	0.502
9	Confined forcibly under watch	32 (6.8)	29 (5.6)	0.407
10	Near death experience	132 (28.1)	141 (27.0)	0.690
11	Forced deprivation from family members	24 (5.1)	23 (4.4)	0.599
15	Kidnapped	9 (1.9)	11 (2.1)	0.833
16	Tortured	166 (35.4)	169 (32.4)	0.316
20	Battered	8 (1.7)	4 (0.8)	0.177
25	Any other situation that was very frightening or in which you felt your life was in danger	32 (6.8)	43 (8.2)	0.401
	Total score—mean (SD)	1.08 (1.06)	1.07 (1.07)	0.901
<i>Traumatic loss</i>				
12	Death of family member or friend	9 (1.9)	13 (2.5)	0.542
13	Unnatural death of family member or friend	2 (0.4)	3 (0.6)	0.742
14	Death of another or stranger	1 (0.2)	2 (0.4)	0.627
	Total score—mean (SD)	0.03 (0.16)	0.03 (0.18)	0.415
<i>Exposure to conflict and social upheaval</i>				
1	Deprived of food and water	273 (58.2)	305 (58.4)	0.944
3	Lacked shelter	154 (32.8)	187 (35.8)	0.323
6	Exposed to combat situation	49 (10.4)	60 (11.5)	0.599
17	Property looted, confiscated, or destroyed	166 (35.4)	169 (32.4)	0.316
18	Exposed to continuous or severe firing	15 (3.2)	22 (4.2)	0.399
19	Forced to evacuate under life threatening situation	269 (57.4)	321 (61.5)	0.185
21	Robbed or blackmailed	23 (4.9)	31 (5.9)	0.474
22	Forced to hide	247 (52.7)	308 (59.0)	0.045
23	Present while someone searched for people or things in your home	22 (4.7)	28 (5.4)	0.629
24	Confined to home because of danger outside	305 (65.0)	371 (71.1)	0.401
	Total score—mean (SD)	3.25 (1.71)	3.45 (1.70)	0.060

Gender differences in clusters of symptoms of trauma

Irrespective of the symptom cluster, significantly more reports were observed among females across all PTSD symptom items and cluster total scales than males (Table 3). Under the “intrusion” symptom cluster, the most reported symptom in both genders was “recurrent thoughts or memories of the most hurtful or terrifying events” (females mean = 2.42 vs. males mean 2.04, $p < 0.001$). Under the “avoidance” cluster, females mostly reported “avoiding thoughts or feelings associated with the traumatic or hurtful experience” (mean = 2.18), while men mostly reported “avoiding activities that remind you of the traumatic or hurtful event” (mean = 1.79). Furthermore, under the “negative cognitions and mood” cluster, the mostly reported symptom in females was “difficulty concentrating” (mean = 2.07), while in males it was “feeling as if you don’t

have a future” (mean = 1.98). Lastly, under the “alterations in arousal and reactivity” symptom cluster, females mostly reported “feeling jumpy, easily startled” (mean = 2.70), while males mostly reported “feeling irritable or having outbursts of anger” (mean = 2.17).

Multiple logistic regression

Interactions between study variables and gender were considered. Some interactions were statistically significant (between gender and health problems and gender and social support score), and some showed a trend toward significance ($p < 0.1$); therefore, regression models were derived for females and males separately. In the adjusted analyses, females who reported an increased number of adverse life events, any physical health problems, having witnessed traumatic events, and

Table 3 Gender differences in reported symptoms of trauma

PTSD item	PTSD symptom cluster	Males mean (SD)	Females mean (SD)	<i>p</i> value
<i>Re-experiencing</i>				
1	Recurrent thoughts or memories of the most hurtful or terrifying events	2.04 (1.19)	2.42 (1.22)	< 0.001
2	Feeling as though the event is happening again	1.67 (1.04)	1.96 (1.14)	< 0.001
3	Recurrent nightmares	1.25 (0.66)	1.52 (0.92)	< 0.001
	Total score—mean (SD)	4.96 (2.33)	5.90 (2.69)	< 0.001
<i>Avoidance</i>				
4	Feeling detached or withdrawn from people	1.71 (1.03)	1.92 (1.13)	0.02
5	Unable to feel emotions	1.56 (0.91)	1.71 (1.00)	0.001
11	Avoiding activities that remind you of the traumatic or hurtful event	1.79 (1.14)	2.09 (1.21)	< 0.001
12	Inability to remember parts of the most traumatic or hurtful events	1.40 (0.80)	1.61 (1.01)	< 0.001
15	Avoiding thoughts or feelings associated with the traumatic or hurtful experience	1.76 (1.08)	2.18 (1.19)	< 0.001
	Total score—mean (SD)	8.22 (3.20)	9.51 (3.71)	< 0.001
<i>Arousal</i>				
6	Feeling jumpy, easily startled	1.68 (1.02)	2.70 (1.21)	< 0.001
8	Trouble sleeping	1.89 (1.10)	2.18 (1.15)	0.001
9	Feeling on guard	1.87 (1.05)	2.19 (1.11)	< 0.001
10	Feeling irritable or having outbursts of anger	2.17 (1.11)	2.52 (1.14)	< 0.001
	Total score—mean (SD)	7.61 (3.12)	9.59 (3.31)	< 0.001
<i>Negative cognitions and mood</i>				
7	Difficulty concentrating	1.68 (1.00)	2.07 (1.11)	< 0.001
13	Less interest in daily activities	1.73 (1.00)	1.99 (1.10)	< 0.001
14	Feeling as if you don't have a future	1.98 (1.20)	1.95 (1.90)	0.649
16	Sudden emotional or physical reaction when reminded of the most hurtful or traumatic events	1.30 (0.74)	1.71 (1.04)	< 0.001
	Total score—mean (SD)	6.68 (2.63)	7.70 (3.09)	< 0.001

experienced domestic violence were more likely to meet PTSD threshold (Table 4). Conversely, females with increased social support were protected from the condition. In contrast to the risk factor profile associated with PTSD threshold in females, males' reporting of physical health problems was not a risk factor, whereas cigarette and tranquilizer use were significantly associated.

Discussion

Most of the current literature has investigated gender differences in PTSD in terms of its prevalence (Christiansen and Elklit 2012; Olf 2017). However, gender differences in terms of trauma types, PTSD symptomatology, or PTSD risk factors have been less extensively studied (Christiansen and Elklit 2012). In the current study, we targeted this gap in the literature by examining gender differences in experienced trauma

types, clusters of symptoms of trauma, and risk factors associated with PTSD.

Gender differences in PTSD prevalence

A large proportion of participants scored above the threshold for PTSD (17.8%), with a significantly higher prevalence among females than males (24.3 vs. 10.4%, respectively). These findings are consistent with findings from other studies conducted in similar settings (Christiansen and Elklit 2012; Farhood 2014; Farhood and Dimassi 2012; Farhood et al. 2006; Farhood, Dimassi, and Strauss 2013; Luxton et al. 2010; Olf et al. 2007). Thus, it is worth scrutinizing these gender differences by not only focusing on "numbers" but also by targeting the question of *why* these differences exist. Specifically, it would be interesting to investigate whether females' vulnerability to specific trauma types would lead to a unique manifestation of symptoms, which, if exacerbated by certain risk factors, would result in a higher PTSD prevalence.

Table 4 Adjusted logistic regression results (odds ratios [OR] and 95% confidence intervals [CI]) for factors associated with PTSD, female and male participants

Variable	Females (<i>N</i> = 522)			Males (<i>N</i> = 469)		
	OR	95% CI	<i>p</i> value	OR	95% CI	<i>p</i> value
Social support score	0.76	0.66–0.87	<0.001	0.68	0.56–0.83	<0.001
Number of social life events	1.40	1.04–1.87	0.025	1.55	1.02–2.34	0.040
Number of HTQ witnessed events	1.25	1.14–1.37	<0.001	1.28	1.13–1.45	<0.001
Any health problem	2.38	1.53–3.70	<0.001	–	–	–
Domestic violence	2.01	1.03–3.93	0.040	2.85	1.10–7.40	0.031
Tranquilizer use	–	–	–	2.81	1.17–6.76	0.021
Cigarette use	–	–	–	2.79	1.39–5.59	0.004

Gender differences in experienced trauma types

Although significant gender differences were found for “suffered ill health without access to medical care,” “imprisoned or taken as a hostage,” and “forced to hide,” gender differences in total scores for reported trauma types were not statistically significant. Total scores on the three trauma types—detention and abuse, traumatic loss, and exposure to conflict and social upheaval—were not statistically significant. In contrast to our findings, prior studies reported in the literature have consistently found gender differences in specific trauma types (Breslau et al. 1999; Kelley et al. 2009; van der Meer et al. 2017), which has led some to conclude that females’ exposure to particular trauma types—combined with the frequency and perceived impact of these traumatic events—might explain their higher vulnerability to develop PTSD (Frans et al. 2005). However, given the aerial warfare nature of that one-month July war that the current study’s sample had experienced, both genders were victims of these war attacks, rather than active partakers.

Gender differences in PTSD symptom clusters

Females reported greater symptoms of trauma across all of the items and across the four symptom clusters considered—intrusion, avoidance, negative alterations in cognitions and mood, and alterations in arousal and reactivity. These findings are consistent with other studies, whereby females reported more PTSD symptoms across the intrusion, avoidance, and alterations in arousal and reactivity clusters. Alternatively, some evidence suggests that males exhibit more physiological arousal and anger compared to females, who report more somatization and dissociation symptoms (Christiansen and Elklit 2012). Nonetheless, it is important to not consider these differences in reported symptom clusters at face value, for they may not reflect true differences. With Lebanon’s patriarchal value system, males may feel “ashamed” to report symptoms of distress due to fear of being perceived as “weak.” However, it is also very likely that these differences in reported PTSD symptom clusters do reflect true differences in the

way these traumatic events are perceived and subsequently portrayed. Accordingly, males may exhibit PTSD through an alternative cluster of symptoms that are not captured as well by the currently known diagnostic criteria (Christiansen and Elklit 2012). This could be indicative of the need to revisit the current diagnostic criteria of PTSD, whereby gender differences in the expression of stress and trauma are considered.

Gender differences in risk factors associated with PTSD

Social support, number of social life events, number of witnessed traumatic events, and domestic violence were consistently associated with meeting the PTSD threshold among both females and males; however, these factors were even more strongly associated among females. Social support was associated with decreased odds of scoring above the threshold for PTSD by approximately 25% for both genders. The protective role of social support against PTSD has been highlighted extensively (Bryant 2016; Farhood and Dimassi 2012; Farhood and Nouredine 2003; Farhood et al. 2013; Olff 2017). The Lebanese culture fortunately treasures and values social support (Farhood et al. 2016). Socio-culturally sensitive micro-policies should be executed such that social support that is available to families is enhanced. Furthermore, reported financial problems were similarly found to be associated with meeting the PTSD threshold (Farhood and Dimassi 2012).

Having health problems, on the other hand, was significantly associated with PTSD only among females. Farhood et al. (2013) similarly found that health problems were associated with approximately twice the odds of PTSD. Conversely, tranquilizer use and cigarette use were significantly associated with meeting the PTSD threshold only among males. This could stem from the difference in coping styles that males employ when dealing with stress.

Limitations

Similar to all research using self-reports, our study’s participants may have experienced recall bias due to their confused

sense of identity or their negative conception of “self.” Some participants may have faced difficulties in the retrieval of voluntary trauma memories, whereas others may have experienced flashbacks while trying to retrieve these memories. Furthermore, cultural, religious, and gender-role biases stemming from Lebanon’s patriarchal value system could hinder female participants’ ability to report on their experiences accurately. Thus, trauma types, trauma symptoms, or risk factors associated with PTSD may have been under-reported or over-reported due to shame, embarrassment, or social desirability. Furthermore, the cross-sectional design of this study did not permit assessment of the temporal relations between experienced trauma types, reported clusters of symptoms of trauma, and risk factors associated with PTSD.

Conclusion and implications

The three components that were examined in the current study—clusters of symptoms of trauma, trauma types, and risk factors—could intervene in the relationship between gender and PTSD prevalence. Specifically, the higher prevalence of PTSD that has consistently been found among females could stem from individual, or combined, influences of these three components. By examining which clusters of symptoms of trauma, or which trauma types, are more characteristic of males and females respectively, treatment could possibly yield more promising long-term outcomes. Similarly, by looking at the risk and protective factors from a gender perspective, PTSD could not only be *treated* but it could also be *prevented*. Therefore, rather than solely focusing on *what* is characteristic of assessments, it would perhaps be more efficient to examine *how* specific vulnerabilities could propel an individual to develop PTSD. It would be interesting for future studies to consider a second phase of a similar research study whereby in the first phase, gender-specific vulnerability profiles would be deciphered while in the second phase, interventions would be planned and implemented accordingly. The effectiveness of these gender-specific interventions would subsequently be assessed at different time intervals and compared to a group that has received standard (non-gender-specific) interventions.

Compliance with ethical standards

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Conflict of interest The authors declare that they have no conflict of interest.

References

- American Psychiatric Association (2013) Diagnostic and statistical manual of mental disorders: DSM-5. American Psychiatric Association, Washington, D.C
- Bouckaert, P. and Houry, N. 2007. Why they died: civilian casualties in Lebanon during the 2006 war: Lebanon (Vol. 19). Human Rights Watch
- Breslau N, Chilcoat HD, Kessler RC, Peterson EL, Lucia VC (1999) Vulnerability to assaultive violence: further specification of the sex difference in post-traumatic stress disorder. *Psychol Med* 29(4):813–821
- Brewin CR, Andrews B, Valentine JD (2000) Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *J Consult Clin Psychol* 68(5):748–766
- Bryant RA (2016) Social attachments and traumatic stress. *Eur J Psychotraumatol* 7:1–7
- Christiansen, D. and Elklit, A. 2012. Sex Differences in PTSD: INTECH Open Access Publisher, Sex Differences in PTSD
- Christiansen DM, Hansen M (2015) Accounting for sex differences in PTSD: a multi-variable mediation model. *Eur J Psychotraumatol* 6:1–10
- de Vries GJ, Olff M (2009) The lifetime prevalence of traumatic events and posttraumatic stress disorder in the Netherlands. *J Trauma Stress* 22(4):259–267
- Ditlevsen DN, Elklit A (2012) Gender, trauma type, and PTSD prevalence: a re-analysis of 18 Nordic convenience samples. *Ann General Psychiatry* 11(1):1–6
- Farhood LF (2014) Patterns of psychiatric morbidity before and after a war in Lebanon at twelve months following cessation of hostilities. *Open Psychiatry J* 8(1):1–9
- Farhood LF, Dimassi H (2012) Prevalence and predictors for post-traumatic stress disorder, depression and general health in a population from six villages in South Lebanon. *Soc Psychiatry Psychiatr Epidemiol* 47(4):639–649
- Farhood LF, Dimassi H (2015) Validation of an Arabic version of the GHQ-28 against the Beck Depression Inventory for screening for depression in war-exposed civilians. *Psychol Rep* 116(2):470–484
- Farhood LF, Noureddine SN (2003) PTSD, depression, and health status in Lebanese civilians exposed to a church explosion. *Int J Psychiatry Medicine* 33(1):39–53
- Farhood LF, Dimassi H, Lehtinen T (2006) Exposure to war-related traumatic events, prevalence of PTSD, and general psychiatric morbidity in a civilian population from Southern Lebanon. *J Transcult Nurs* 17(4):333–340
- Farhood LF, Dimassi H, Strauss NL (2013) Understanding post-conflict mental health: assessment of PTSD, depression, general health and life events in civilian population one year after the 2006 war in South Lebanon. *J Trauma Stress Disor Treat* 2(2):1–8
- Farhood LF, Fares S, Sabbagh R, Hamady C (2016) PTSD and depression construct: prevalence and predictors of co-occurrence in a South Lebanese civilian sample. *Eur J Psychotraumatol* 7:31509
- Frans Ö, Rimmö PA, Åberg L, Fredrikson M (2005) Trauma exposure and post-traumatic stress disorder in the general population. *Acta Psychiatr Scand* 111(4):291–290
- Galovski TE, Mott J, Young-Xu Y, Resick PA (2010) Gender differences in the clinical presentation of PTSD and its concomitants in survivors of interpersonal assault. *J Interpersonal Violence*
- Hourani L, Williams J, Bray R, Kandel D (2015) Gender differences in the expression of PTSD symptoms among active duty military personnel. *J Anxiety Disorders* 29:101–108
- Kelley LP, Frank WW, Meghan EM, Eakin DE, Amanda MF (2009) A comparison of PTSD symptom patterns in three types of civilian trauma. *J Trauma Stress* 22(3):227–235
- Kessler RC, Sonnega A, Bromet E, Hughes M, Nelson CB (1995) Posttraumatic stress disorder in the National Comorbidity Survey. *Arch Gen Psychiatry* 52(12):1048–1060

- Luxton DD, Skopp NA, Maguen S (2010) Gender differences in depression and PTSD symptoms following combat exposure. *Depression Anxiety* 27(11):1027–1033
- McFarlane AC (2000) Posttraumatic stress disorder: a model of the longitudinal course and the role of risk factors. *J Clin Psychiatry* 61:15–23
- Michultka D, Blanchard EB, Kalous T (1998) Responses to civilian war experiences: predictors of psychological functioning and coping. *J Trauma Stress* 11(3):571–577
- Mollica RF, 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(2):111–116
- Olf M (2017) Sex and gender differences in post-traumatic stress disorder: an update. *Eur J Psychotraumatol* 8(4):1351204
- Olf M, Langeland W, Draijer N, Gersons BP (2007) Gender differences in posttraumatic stress disorder. *Psychol Bull* 133(2):183–204
- Perrin M, Vandeleur CL, Castela E, Rothen S, Glaus J, Vollenweider P, Preisig M (2014) Determinants of the development of posttraumatic stress disorder, in the general population. *Soc Psychiatry Psychiatr Epidemiol* 49(3):447–457
- Saab BR, Chaaya M, Doumit M, Farhood L (2003) Predictors of psychological distress in Lebanese hostages of war. *Soc Sci Med* 57(7):1249–1257
- 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(5):447–463
- Simmons CA (2007) Speculation as to why women “get” PTSD more often than men. *Women & Therapy* 30(1–2):85–98
- Small Arms Survey (2010) Lebanon Armed Violence Assessment: Issue Brief (1). <http://www.smallarmssurvey.org/>
- Steel Z, Silove D, Bird K, McGorry P, Mohan P (1999) Pathways from war trauma to posttraumatic stress symptoms among Tamil asylum seekers, refugees, and immigrants. *J Trauma Stress* 12(3):421–435
- Stevanović A, Frančišković T, Vermetten E (2016) Relationship of early-life trauma, war-related trauma, personality traits, and PTSD symptom severity: a retrospective study on female civilian victims of war. *Eur J Psychotraumatol* 7:1–10
- Tekin A, Karadağ H, Süleymanoğlu M, Tekin M, Kayran Y, Alpak G, Şar V (2016) Prevalence and gender differences in symptomatology of posttraumatic stress disorder and depression among Iraqi Yazidis displaced into Turkey. *Eur J Psychotraumatol* 7:1–8
- Tolin DF, Foa EB (2006) Sex differences in trauma and posttraumatic stress disorder: a quantitative review of 25 years of research. *Psychol Bull* 132(6):959–992
- United Nations Interim Force in Lebanon (UNIFIL). 2016. <http://www.un.org/en/peacekeeping/missions/unifil/background.shtml>
- Usta J, Antoun J, Ambuel B, Khawaja M (2012) Involving the health care system in domestic violence: what women want. *Annals Family Medicine* 10(3):213–220
- van der Meer CA, Bakker A, Smit AS, van Buschbach S, den Dekker M, Westerveld GJ et al (2017) Gender and age differences in trauma and PTSD among Dutch treatment-seeking police officers. *J Nerv Ment Dis* 205(2):87–92