

Psychological Consequences of War Trauma and Postwar Social Stressors in Women in Bosnia and Herzegovina

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Aim To assess the consequences of psychotrauma in civilian women in Herzegovina who were exposed to prolonged and repetitive traumatic war events and postwar social stressors.

Methods The study included a cluster sample of 367 adult women, divided into two groups. One group (n = 187) comprised women from West Mostar who were exposed to serious traumatic war and post-war events. The other group (n = 180) comprised women from urban areas in Western Herzegovina who were not directly exposed to war destruction and material losses, but experienced war indirectly, through military drafting of their family members and friends. Demographic data on the women were collected by a questionnaire created for the purpose of this study. Data on trauma exposure and posttraumatic stress disorder (PTSD) symptoms were collected by Harvard Trauma Questionnaire (HTQ) – Bosnia-Herzegovina version. General psychological symptoms were determined with Symptom Check List-90-revised (SCL-90-R). Data on postwar stressors were collected by a separate questionnaire.

Results In comparison with the control group, women from Western Mostar experienced significantly more traumatic events (mean ± standard deviation [SD], 3.3 ± 3.2 vs 10.1 ± 4.9, respectively, $t = 15.91$; $P < 0.001$) and had more posttraumatic symptoms (12.3 ± 10.3 vs 21.2 ± 10.9, respectively, $t = 8.42$; $P < 0.001$). They also had significantly higher prevalence of PTSD (4.4% vs 28.3%, respectively; $\chi^2 = 52.56$; $P < 0.001$). The number of traumatic events experienced during the war was positively associated with postwar stressful events both in the West Mostar group ($r = 0.223$; $P = 0.002$) and control group ($r = 0.276$; $P < 0.001$). Postwar stressful events contributed both to the number and intensity of PTSD symptoms and all general psychological symptoms measured with SCL-90 questionnaire, independently from the number of experienced traumatic war events.

Conclusion Long-term exposure to war and postwar stressors caused serious psychological consequences in civilian women, with PTSD being only one of the disorders in the wide spectrum of posttraumatic reactions. Postwar stressors did not influence the prevalence of PTSD but they did contribute to the intensity and number of posttraumatic symptoms.

There are few studies investigating how political violence in a community influences women, and those that do exist mostly deal with refugees (1,2). Epidemiologic research into consequences of war trauma established that posttraumatic stress disorder (PTSD), although the most frequent, was rarely the only psychological disorder among the general population of war-stricken countries (3-6) and that women had noticeably poorer mental health than the rest of the population (2,7). Studies investigating psychological consequences of military and civil trauma confirmed the correlation between the nature and intensity of trauma, previous traumatic experience, and psychological consequences (8-11).

Because of its brutality, the war in Bosnia and Herzegovina has become the paradigm for traumatic experience, with the constant need for psychological and psychiatric help for victims long after its end. Previous research and local health care have mostly been focused on men, and preventive and therapeutic activities have targeted primarily the population of war veterans. However, there is no doubt that chronic war stress caused serious psychological problems in women in war-affected areas, although clinical experience about this problem is scarce. The reason why little is known about mental health of women in Bosnia and Herzegovina is that a relatively small number of psychotraumatized women seek psychiatric or psychological help (12). Previous research and local health care system dealt mostly with male population, which is the reason why most preventive and curative actions have been directed at veteran population. However, chronic war stress has doubtlessly had deep consequences on psychological health of women as well (13). Literature data and personal clinical experience indicate that clinical identification of PTSD is frequently hampered by gender prejudices, including the tendency to overlook traumatic nature of

violence against women along with associated posttraumatic symptoms (14).

The war did not affect all areas of Bosnia and Herzegovina equally. In some parts of the country, it was more intense and lasted longer than in others. The whole city of Mostar was a battlefield and suffered heavy destruction and human losses on everyday basis. Today, it is divided into Western Mostar and Eastern Mostar, and still struggles with devastated infrastructure and economic resources. On the other hand, urban areas in Western Herzegovina, although not too far from Mostar, were spared from everyday destruction and the civilian population was not directly exposed to life threatening situations. Also, postwar social and economic deprivation in that area has not been so pronounced as in Mostar.

We expected that women exposed to war atrocities in Bosnia and Herzegovina would suffer posttraumatic psychological consequences and that a significant percentage of women in Mostar would develop posttraumatic disorders (PTSD, posttraumatic symptoms, and general psychological symptoms) as a reaction to traumatic experiences. We also expected that the percentage of women with posttraumatic disorders would be smaller in areas only indirectly affected by the war. Since postwar social stressors make the recovery more difficult, we also expected that women who were exposed to additional postwar social stressors would have more difficult recovery and more pronounced posttraumatic disorders.

The aim of this study was to determine the degree of posttraumatic symptoms and symptoms of other mental disorders in women who were living in war-stricken areas for several years, determine the correlation between the number and intensity of posttraumatic symptoms and the intensity of psychotrauma, and establish the influence of postwar stressors on the manifestation and duration of posttraumatic and general psychological symptoms.

Participants and methods

Participants

The target group was civilian female population in Western Herzegovina. The only inclusion criterion was age between 28 and 65 years, ie, that the participant was at least 16 years old at the beginning of the war in Bosnia and Herzegovina. Exclusion criteria were poor general health and previous or current mental health condition.

The participants were divided into two groups. One group consisted of women from Western Mostar who had been directly exposed to war for four years and afterwards to postwar social stressors. The other group consisted of women from urban areas in the Western Herzegovina (Široki Brijeg, Ljubuški, and Čitluk) who were not directly exposed to war destruction. All women included in the study were informed about the purpose of the study and gave their written informed consent.

The study plan was to include at least 180 women per group. Women in the study areas were contacted until the planned number of study participants was reached. The participants were selected systematically. Four city quarters in Western Mostar were randomly selected among those adjacent to the line of division, and women who lived in even-numbered houses in every other street were contacted. Study participants from other three cities in Western Herzegovina were selected in the same way.

Of 280 women who were contacted in Western Mostar, 11 did not meet the criteria and 82 refused to participate in the study. Thus, the final group included 187 women (66.7% positive response rate). In the towns in Western Herzegovina, we contacted a total of 265 women of whom 8 did not meet the criteria and 77 refused to participate in the study (67.9% response rate). These 180 women were included in the control group.

The women who agreed to participate in the study filled out a battery of questionnaires and tests.

Method

The questionnaires were administered by 13 nurses and medical technicians, 5 from the Department of Psychiatry, Mostar University Hospital, and 8 from Health Centers in Široki Brijeg, Ljubuški, and Čitluk. After being instructed by a psychologist and principal investigator on how to administer the questionnaires, the field staff contacted the women according to the previously developed plan.

The women who agreed to participate in the study were given the batteries of prepared questionnaires and necessary explanations to complete them at home. All women were given a contact phone number to reach the principal investigator and ask for additional information on the study or request possible professional help at any time. After the phone contact, the field staff returned to collect the completed questionnaires from the women and handed them over to the principal investigator.

Questionnaires

General demographic data were collected with general demographic questionnaire structured for the purposes of this study. To determine the level of traumatization and presence of post-traumatic symptoms, we used Harvard Trauma Questionnaire – Bosnia and Herzegovina version (15). This is a checklist used for the purposes of a structured interview on different traumatic experiences and emotional difficulties directly associated with trauma. It consists of 4 parts, although only the first and fourth part were used in this study. The first part is a list of possible traumatic events (module I), which contains 46 yes/no questions about traumatic events to which civilians in Bosnia and Herzegovina could be exposed during the war and refuge. This part is not scored. The fourth part (module IV) contains 40 statements about possible psychosocial difficulties caused by trauma. The first 16 statements are derived from DSM-IV criteria for PTSD (16)

and inquire about the symptoms of re-experiencing traumatic event, avoidance, and psychological agitation. The statements 17 to 40 refer to the participant's perception of the influence of trauma on her ability to function in everyday life. The chosen degree of influence is scored on a 1-4 scale (1 – not at all, 2 – a little, 3 – quite a lot, and 4 – very much). The total result is the average score on all 40 statements, and the total result >2.5 was considered "positive" for PTSD.

To determine the presence of general psychological symptoms, Brief Symptom Inventory, a short version of the Symptom Checklist-90-R (17), was administered. It is a 53-item self-report inventory scale that measures three global indices of distress (global severity index, positive symptom total, and positive symptom distress index) and 9 key groups of symptoms (somatization, obsessive-compulsive problems, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism). Each item is assessed on a 5-point scale (0 – not at all, 1 – a little, 2 – moderately, 3 – a lot, and 4 – extremely).

The list of recent life events was used to determine possible postwar stressors affecting the study participants (18). This self-reported instrument consists of 43 items describing postwar stressors, ie, life events or life changes that occurred in the previous 12 months (personal health, existential, professional, family and social changes, separation, illness or death of family members or friends). The study participants were asked to mark the events that happened in their life in the previous 12 months with an "X" sign. If an event happened more than once, it was to be marked with two "X" signs.

Statistical analysis

Internal consistency was determined for all questionnaires and expressed as Cronbach α . The distribution of results was given for all measures and basic descriptive parameters were calculated (mean \pm standard deviation [SD]). To test the

differences between the groups, χ^2 test was used for nominal variables (frequencies) and t test for interval variables. To determine the association between the measures, Pearson correlation coefficient was calculated, and contingency coefficient and ϕ -coefficient was calculated for nominal variables. $P < 0.05$ was considered statistically significant.

Results

Women in the West Mostar group were significantly older than women in the control group (46.1 ± 10.2 vs 42.4 ± 10.2 years; $t = 3.62$; $P < 0.001$). They were also significantly more often widowed or divorced (Table 1). With respect to education level and employment status, no significant differences were found between the two groups (Table 1). In comparison with women in the control group, significantly more women in the West Mostar group had posttraumatic symptoms meeting the criteria for PTSD diagnosis (4.4% vs 28.3%), and significantly less women had posttraumatic symptoms not meeting the criteria for PTSD diagnosis (27.2% vs 7.5%), whereas the number of women without posttraumatic symptoms was similar in both groups (64.2% vs 68.3%, $\chi^2 = 52.56$; $P < 0.001$; Table 2).

Table 1. Demographical characteristics of women included in the study

Characteristic	No. (%) of women		χ^2	P^*
	West Mostar group (n = 187)	control group (n = 180)		
Marital status:			8.74	0.033
married	139 (74.3)	146 (81.1)		
single	18 (9.6)	21 (11.7)		
widowed	20 (10.7)	11 (6.1)		
divorced	10 (5.3)	2 (1.1)		
Education:			4.05	0.256
elementary	29 (15.5)	26 (14.4)		
high school	131 (70.1)	114 (63.3)		
college	14 (7.5)	18 (10.0)		
university	13 (7.0)	22 (12.2)		
Employment status:			0.24	0.623
employed	96 (51.3)	98 (54.4)		
not employed	91 (48.7)	82 (45.6)		
Economic status:			22.75	<0.001
low	42 (22.7)	11 (6.1)		
medium	119 (64.3)	127 (70.9)		
high	24 (13.0)	41 (22.9)		

* χ^2 test.

Table 2. Posttraumatic stress disorder (PTSD) symptoms present in women included in the study, according to Harvard Trauma Questionnaire results

	No. (%) of women*	
	West Mostar group (n = 187)	control group (n = 180)
PTSD symptoms		
PTSD present	53 (28.3)	8 (4.4)
Posttraumatic symptoms present, but not PTSD	14 (7.5)	49 (27.2)
No posttraumatic symptoms	120 (64.2)	123 (68.3)

*West Mostar group vs control group, $\chi^2 = 52.56$, $P < 0.001$.

Table 3. Presence of general psychological symptoms in women included in the study according to Symptom Checklist-90-R average scores

Symptom Checklist-90 scales	Score (mean \pm standard deviation)		t	P*
	West Mostar group (n = 187)*	control group (n = 180)		
Somatization	7.68 \pm 6.53	4.68 \pm 4.87	5.00	<0.001
Obsessive-compulsive	6.40 \pm 5.62	3.59 \pm 3.61	5.71	<0.001
Interpersonal sensitivity	3.35 \pm 3.60	2.21 \pm 2.59	3.50	0.001
Depression	5.26 \pm 5.53	2.48 \pm 3.36	5.83	<0.001
Anxiety	6.95 \pm 5.97	3.85 \pm 3.98	5.88	<0.001
Hostility	4.31 \pm 3.61	2.27 \pm 2.50	6.30	<0.001
Phobic anxiety	3.73 \pm 4.36	2.29 \pm 3.23	3.60	<0.001
Paranoid ideation	6.19 \pm 4.91	3.88 \pm 3.67	5.13	<0.001
Psychoticism	2.45 \pm 3.36	1.46 \pm 2.32	3.29	0.001
Positive symptom total	26.05 \pm 15.08	18.87 \pm 13.73	4.77	<0.001
Global severity index	0.95 \pm 0.78	0.55 \pm 0.53	5.70	<0.001
Positive symptom distress index	1.66 \pm 0.64	1.31 \pm 0.50	5.92	<0.001

*t test.

All 9 groups of symptoms on the SCL-90-R were significantly more pronounced in women in the West Mostar group than in control group (Table 3), as well as all three global indices (global severity index, positive symptom total, and positive symptom distress index).

To investigate if the number of traumatic experiences during the war influenced the occurrence of posttraumatic and general psychological symptoms, we evaluated the association between the number of traumatic events according to the Harvard Trauma Questionnaire module I results and the results obtained on the Harvard Trauma Questionnaire module IV and Symptom Checklist-90 questionnaires. Women in the West Mostar group experienced significantly more traumatic events and had more posttraumatic symptoms, which were also more intense (Table 4).

Table 4. The number of traumatic events and number and intensity of posttraumatic symptoms according to the Harvard Trauma Questionnaire results in the West Mostar group and control group of women from Western Herzegovina

Parameter	Group (mean \pm standard deviation)		P*
	West Mostar group (n = 187)	control group (n = 180)	
No. of traumatic events	10.1 \pm 4.9	3.3 \pm 3.2	<0.001
No. of posttraumatic symptoms	21.2 \pm 10.9	12.3 \pm 10.3	
Intensity of posttraumatic symptoms†	1.9 \pm 0.6	1.4 \pm 0.4	<0.001

*t test.

†Mean score (\pm standard deviation)

of 40 items from the Harvard Trauma Questionnaire, each on a scale from 1 (not at all) to 4 (very much).

The number of traumatic events experienced by women in the West Mostar group was positively associated with all groups of symptoms measured by SCL-90-R questionnaire and with all three global indices (Table 5). The larger number of traumatic events was associated with more pronounced symptoms. In the control group, the number of traumatic events was positively associated only with the symptoms of depression, hostility, and the total number of symptoms (positive symptom total).

Table 5. Correlation between the number of traumatic events and presence of general psychological symptoms according to Symptom Checklist-90-R questionnaire

Symptom Checklist-90-R scales	Pearson correlation coefficients	
	West Mostar group (n = 187)*	control group (n = 187)
Somatization	0.421	0.094
Obsessive-compulsive symptoms	0.360	0.126
Interpersonal sensitivity	0.360	0.131
Depression	0.367	0.183†
Anxiety	0.403	0.142
Hostility	0.293	0.172†
Phobic anxiety	0.276	0.053
Paranoid ideation	0.387	0.119
Psychoticism	0.348	0.106
Positive symptom total	0.416	0.181†
Global severity index	0.417	0.142
Positive symptom distress index	0.401	0.043

*P < 0.01 for all.

†P < 0.05.

To investigate the influence of postwar stressors on posttraumatic and general psychological symptoms, we first calculated correlation coefficients between postwar stressors and results on both Harvard Trauma Questionnaire module IV and SCL-90-R questionnaire. However, since

war stressors (Harvard Trauma Questionnaire module I) were associated with the symptoms, to investigate if the postwar stressors contributed to posttraumatic symptoms independently of war stressors, we calculated partial correlation coefficients to determine the relationship between postwar stressors and posttraumatic symptoms, with exclusion of the effects of traumatic war events. The number of traumatic war events was positively associated with postwar stressors in both the West Mostar group ($r=0.223$; $P=0.002$) and control group ($r=0.276$; $P<0.001$). Women who were exposed to a larger number of war stressors also experienced a larger number of postwar stressors. Postwar stressors in both groups of women were positively associated with posttraumatic symptoms measured by the Harvard Trauma Questionnaire. More serious postwar stressors were associated with more pronounced posttraumatic symptoms.

In the West Mostar group, partial correlation coefficients between postwar stressors and posttraumatic symptoms, with the exclusion of the effect of the number of traumatic war events, were statistically significant for the number of PTSD symptoms and average intensity of PTSD

symptoms, but were not significant for the presence of PTSD (Table 6). Postwar stressors significantly contributed to the number and intensity of PTSD symptoms independently from the number of traumatic war events, but not to the presence of PTSD. In the control group, partial correlation coefficients between postwar stressors and posttraumatic symptoms, with the exclusion of the effect of the number of traumatic war events, were significant and positive for the average intensity of PTSD symptoms. Thus, postwar stressors significantly contributed to the average intensity of PTSD symptoms independently from the number of traumatic war events, but not to the number of PTSD symptoms and the presence of PTSD.

In the West Mostar group, all symptoms measured with SCL-90-R were positively associated with postwar stressors (Table 6). Even when the effect of the number of traumatic war events was controlled for, all correlations between postwar stressors and Symptom Checklist-90 groups of symptoms were statistically significant and positive. Postwar stressors contributed to all groups of SCL-90-R symptoms in these women independently from the effect of war trauma

Table 6. Correlation between the postwar stressors and the presence of posttraumatic symptoms measured with Harvard Trauma Questionnaire and general psychological symptoms measured with Symptom Checklist-90-R in women included in the study

Symptoms	West Mostar group (n = 187)		Control group (n = 180)	
	total result on postwar stressors	partial correlation coefficient*	total result on postwar stressors	partial correlation coefficient*
Harvard Trauma Questionnaire				
No. of symptoms of posttraumatic stress disorder	0.27 [†]	0.19 [‡]	0.22 [†]	0.13
Average intensity of symptoms of posttraumatic stress disorder	0.27 [†]	0.18 [‡]	0.28 [†]	0.20 [†]
presence of posttraumatic stress disorder	-0.16 [‡]	-0.09	-0.07	-0.12
Symptom Checklist-90-R symptoms:				
somatization	0.33 [†]	0.27 [§]	0.31 [†]	0.30 [§]
obsessive-compulsive symptoms	0.31 [†]	0.25 [§]	0.18 [‡]	0.15 [‡]
interpersonal sensitivity	0.30 [†]	0.24 [§]	0.22 [†]	0.19 [†]
depression	0.34 [†]	0.29 [§]	0.18 [‡]	0.13
anxiety	0.31 [†]	0.25 [§]	0.27 [†]	0.24 [§]
hostility	0.32 [†]	0.28 [§]	0.28 [†]	0.25 [§]
phobic anxiety	0.24 [†]	0.20 [†]	0.11	0.10
paranoid ideation	0.30 [†]	0.24 [§]	0.32 [†]	0.30 [§]
psychoticism	0.34 [†]	0.29 [§]	0.10	0.07
positive symptom total	0.37 [†]	0.32 [§]	0.22 [†]	0.18 [‡]
global severity index	0.36 [†]	0.30 [§]	0.27 [†]	0.25 [§]
positive symptom distress index	0.25 [†]	0.18 [‡]	0.29 [†]	0.28 [§]

*Partialized for war stressors.

[†] $P<0.01$.

[‡] $P<0.05$.

[§] $P<0.001$.

events. In the control group, all SCL-90-R symptoms, except for phobic anxiety and psychoticism, were positively associated with postwar stressors. The more serious were the postwar stressors, the more pronounced were the symptoms. When the effect of the number of traumatic war events was controlled for, the correlation between postwar stressors and depressive symptoms ceased to be significant. In the control group, postwar stressors contributed to all groups of general psychological symptoms except for the symptoms of phobic anxiety, psychoticism, and depression, independently from the effect of the number of traumatic war events (Table 6).

Discussion

Our study showed that women in Bosnia and Herzegovina who were directly exposed to long-term and extreme war trauma had serious posttraumatic and general psychological symptoms even 10 years after the war.

A total of 28.3% of women included in the study met the criteria for PTSD diagnosis and another 7.5% had some of the posttraumatic symptoms (partial PTSD). Only 4.4% of the women from the control group met the criteria for PTSD diagnosis and 27.2% had some of the PTSD symptoms were in. Also, in the West Mostar group there were significantly more general psychological symptoms (somatization, depression, anxiety, hostility, obsessive-compulsive symptoms, interpersonal sensitivity, phobic anxiety, paranoid ideation, and psychoticism) and they were more intense. This finding shows that there is a strong association not only between traumatization level and PTSD, but also between traumatization level and the prevalence of comorbid characteristics of psychological disturbances and symptoms. It also shows that in a large number of the traumatized, the diagnostic category of PTSD alone does not adequately cover the range of symptoms that appear after trauma. This finding is in accordance with other

studies on war trauma and its consequences on civil population (3-5) and with the studies indicating that the number of posttraumatic reactions is much larger than the syndromes usually associated with psychotrauma (7,19,20). However, the fact is that psychotraumatized women rarely seek psychiatric help (12,13), and the reasons are unclear. In social and clinical settings today, the consequences of war are rarely assumed to have affected civilian women. Some studies established that, excluding the potential diagnosis of PTSD, women would often have symptoms that met the criteria of on average four other axis I diagnoses, according DSM IV classification (16), thus influencing the therapeutic approach (14).

In our study, the severity of PTSD and the extent of general psychological symptoms in women in the West Mostar group, who experienced significantly more traumatic war events than women in the control group, can be associated with the extreme nature of their traumatic experiences. During 4 years of war, almost every woman in the West Mostar group had repeatedly witnessed horrible scenes and experienced situations where their lives or lives of their family and significant others were directly threatened. Although the influence of a traumatic event is often taken into account only if it was life-threatening, its effects on interpersonal relationships, especially for women, can also be important for the occurrence of PTSD (21,22). The results of our study also confirm that the characteristics of exposure to trauma and the traumatic event itself may lead to a great variability in the number and intensity of PTSD symptoms, which is in accordance with findings of other authors (10,11,23-28).

However, some authors emphasize that stressful experiences are not only limited to traumatic life events, but include stress in everyday life, especially if it persists over a longer period of time (29-31). Our study also showed that everyday postwar stressors (personal health, existential, professional, family, and social changes,

separation, illness or death of family members or friends) were associated with posttraumatic and general psychological symptoms. The number of recent stressful life events, such as changes in social, working, and economic conditions, in health and behavior of a family member, or separation from family or family breakdown contributed to the intensity of posttraumatic symptoms and the number of general psychological symptoms, possibly by exhausting the remaining coping resources and reducing the feeling of social support. This was found in both groups of women in our study. However, the differences were found in the number of posttraumatic symptoms and symptoms of phobic anxiety, psychoticism, and depression, which were present in women in the West Mostar group, but not in the control group.

The number of posttraumatic symptoms was also influenced by the degree and number of postwar stressors. The number of posttraumatic symptoms was larger when postwar stressors were more numerous, affecting all aspects of everyday life. In cases of severe traumatization and high exposure to everyday postwar stressors, additional neurophysiologic collapse may often be found, as well as an increased feeling of helplessness and lack of control over one's own life (32).

Phobias are the most frequent anxious disorder comorbid with posttraumatic symptoms in psychotraumatized victims. Both disorders share the reactive component, but it is possible that some common underlying neurophysiologic mechanisms, which are less susceptible to the level of everyday stress, are also at play (33,34).

Symptoms of psychoticism in the traumatized are relatively frequent. A few recent studies have shown that around 18% of patients with PTSD also have psychotic symptoms (35,36).

Depression is one of the most frequent psychiatric disorders comorbid with PTSD (6,10,34). Mood disorders may develop as a com-

plicated response to the loss associated with traumatic event (6,34).

Since women in the control group were not exposed to significant losses, either material, emotional, or perceived, and not many suffered from PTSD, positive correlation between postwar stressors and depression (effect of the number of traumatic war events not excluded) could have resulted from the overlap between depressive and PTSD symptoms, which were present in over a quarter of these women but were neither numerous nor intense enough to justify the diagnosis of PTSD. On the other hand, this positive correlation could have resulted from the long-term exposure to war context in general, even if there was no direct exposure to war-related traumatic events.

Our study had several limitations. It was conducted among general population of women in a single postwar enclave in Bosnia and Herzegovina, so no generalization outside this scope should be done without additional information. The differences between the groups may limit the generalizability of findings, although the findings reflect war and postwar life circumstances of the women included in the study. More women in the West Mostar group suffered the loss of the spouse in the war or their families fell apart due to other reasons caused by the war. Lower economic status of the women in the West Mostar group today is the result not only of their material losses due to immediate war destruction, but also of destroyed economic infrastructure in the Mostar area, which is recovering very slowly. This could be one of the reasons for a relatively low return rate of younger population that was forced into exile by the war, which is reflected in the older age of women included in the study.

In conclusion, we found that war trauma caused PTSD as well as a wide range of general psychological symptoms in a quarter of women included in the study. The possibility of occurrence of PTSD and its intensity were higher with the greater number of traumatic experi-

ences. Psychological trauma, especially a very intense one, makes a person more prone to reaction and development of general psychological symptoms and more sensitive to postwar stressors, whereas the occurrence of phobic, psychotic, and depressive symptoms depends more strongly on psychotraumatization than on everyday stressors. When psychological trauma is less intense, stressful life events play an important role in the occurrence of general psychological symptoms. Further research should focus on psychosocial consequences of cumulative effects of war trauma and postwar life stressors on the family, as well as on the development of strategies for prevention of the consequences of war and treatment of traumatized families.

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References

- 1 Norris FH, Foster JD, Weisshaar DL. The epidemiology of sex differences in PTSD across developmental, social, and research contexts. In: Kimerling R, Ouimette P, Wolfe J, editors. *Gender and PTSD*. New York (NY): The Guilford Press; 2002. p. 3-43.
- 2 Mollica R, Poole C, Tor S. Symptoms, functioning, and health problems in a massively traumatized population: the legacy of the Cambodian tragedy. In: Dohrenwend BP, editor. *Adversity, stress, and psychopathology*. New York (NY): Oxford University Press; 1998. p. 34-51.
- 3 Somasundaram DJ, Sivayokan S. War trauma in a civilian population. *Br J Psychiatry*. 1994;165:524-7. [Medline:7804667](#)
- 4 de Jong JT, Komproe IH, Van Ommeren M, El Masri M, Araya M, Khaled N, et al. Lifetime events and posttraumatic stress disorder in 4 postconflict settings. *JAMA*. 2001;286:555-62. [Medline:11476657](#)
- 5 Malac Al-R Civilian war-zone traumas, complex PTSD, and psychopathology: the case of Kuwaiti women [dissertation]. Denver (CO): University of Denver; 2004.
- 6 Momartin S, Silove D, Manicavasagar V, Steel Z. Comorbidity of PTSD and depression: associations with trauma exposure, symptom severity and functional impairment in Bosnian refugees resettled in Australia. *J Affect Disord*. 2004;80:231-8. [Medline:15207936](#)
- 7 Cardozo BL, Bilukha OO, Crawford CA, Shaikh I, Wolfe MI, Gerber ML, et al. Mental health, social functioning, and disability in postwar Afghanistan. *JAMA*. 2004;292:575-84. [Medline:15292083](#)
- 8 Yehuda R. Post-traumatic stress disorder. *N Engl J Med*. 2002;346:108-14. [Medline:11784878](#)
- 9 Fullerton CS, Ursano RJ, Wang L. Acute stress disorder, posttraumatic stress disorder, and depression in disaster or rescue workers. *Am J Psychiatry*. 2004;161:1370-6. [Medline:15285961](#)
- 10 DeLisi LE, Maurizio A, Yost M, Papparozi CF, Fulchino C, Katz CL, et al. A survey of New Yorkers after the Sept. 11, 2001, terrorist attacks. *Am J Psychiatry*. 2003;160:780-3. [Medline:12668369](#)
- 11 Verger P, Dab W, Lamping DL, Loze JY, Deschaseaux-Voinet C, Abenheim L, et al. The psychological impact of terrorism: an epidemiologic study of posttraumatic stress disorder and associated factors in victims of the 1995-1996 bombings in France. *Am J Psychiatry*. 2004;161:1384-9. [Medline:15285963](#)
- 12 Loga S, Cerić I, Sinanović O, editors. *Psychological disorders in women. The 8th Days of Psychiatry in Bosnia and Herzegovina*. Sarajevo: Bosnian and Herzegovinian Psychiatric Association; 2000.
- 13 Arcel LT, Popović S, Kučukalić A, Mehmedbašić AB. Treatment of the survivors of torture and trauma in postwar society [In Bosnian]. Sarajevo: CTV Sarajevo; 2003.
- 14 Cloitre M, Koenen KC, Gratz KL, Jakupcak M. Differential diagnosis of PTSD in women. In: Kimerling R, Ouimette P, Wolfe J, editors. *Gender and PTSD*. New York (NY): The Guilford Press; 2002. p. 117-50.
- 15 Allden K, Cerić I, Kapetanovic A, Lavelle J, Loga S, Mathias M, et al. *Harvard trauma manual: Bosnia-Herzegovina version*. Cambridge: Harvard Program in Refugee Trauma; 1998.
- 16 American Psychiatric Association. *Diagnostic and statistical manual of mental disorders, fourth edition (DSM-IV)*. International version with ICD-10 codes [in Croatian]. Jastrebarsko: Naklada Slap; 1996.
- 17 Derogatis LR. *SCL-90. Administration, scoring and procedure manual-I for the revised version*. Baltimore (MA): John Hopkins University School of Medicine; 1977.
- 18 Bird G, Melville K. *Families and intimate relationships*. New York (NY): Mc Grow Inc.; 1994.
- 19 Zlotnick C, Zimmerman M, Wolfsdorf BA, Mattia JJ. Gender differences in patients with posttraumatic stress disorder in a general psychiatric practice. *Am J Psychiatry*. 2001;158:1923-5. [Medline:11691704](#)
- 20 Zatzick DF, Weiss DS, Marmar CR, Metzler TJ, Wells K, Golding JM, et al. Post-traumatic stress disorder and functioning and quality of life outcomes in female Vietnam veterans. *Mil Med*. 1997;162:661-5. [Medline:9339077](#)
- 21 King DW, King LA, Foy DW, Gudanowski DM. Prewar factors in combat-related posttraumatic stress disorder: structural equation modeling with a national sample of female and male Vietnam veterans. *J Consult Clin Psychol*. 1996;64:520-31. [Medline:8698946](#)
- 22 Solomon Z, Mikulincer M, Avitzur E. Coping, locus of control, social support, and combat-related posttraumatic stress disorder: a prospective study. *J Pers Soc Psychol*. 1988;55:279-85. [Medline:3171908](#)
- 23 Henigsberg N, Folnegovic-Smale V, Moro L. Stressor characteristics and post-traumatic stress disorder symptom dimensions in war victims. *Croat Med J*. 2001;42:543-50. [Medline:11596171](#)
- 24 Breslau N, Davis GC. Posttraumatic stress disorder: the etiologic specificity of wartime stressors. *Am J Psychiatry*.

- 1987;144:578-83. [Medline:3578567](#)
- 25 Yehuda R, McFarlane AC. Conflict between current knowledge about posttraumatic stress disorder and its original conceptual basis. *Am J Psychiatry*. 1995;152:1705-13. [Medline:8526234](#)
- 26 Kulka RA, Schlenger WE, Fairbank JA, Hough RL, Jordan BK, Marmar CR, et al. Trauma and the Vietnam war generation: report of findings from the National Vietnam Veterans Readjustment Study. New York (NY): Brunner/Mazel; 1990.
- 27 Foy DW, Sippelle RC, Rueger DB, Carroll EM. Etiology of posttraumatic stress disorder in Vietnam veterans: analysis of premilitary, military, and combat exposure influences. *J Consult Clin Psychol*. 1984;52:79-87. [Medline:6699251](#)
- 28 Brewin CR, Andrews B, Valentine JD. Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *J Consult Clin Psychol*. 2000;68:748-66. [Medline:11068961](#)
- 29 Billings AG, Moos RH. Coping, stress, and social resources among adults with unipolar depression. *J Pers Soc Psychol*. 1984;46:877-91. [Medline:6737198](#)
- 30 Pearlman LI. The sociological study of stress. *J Health Soc Behav*. 1989;30:241-56. [Medline:2674272](#)
- 31 Wheaton B. Stress, personal coping resources, and psychiatric symptoms: an investigation of interactive models. *J Health Soc Behav*. 1983;24:208-29. [Medline:6630976](#)
- 32 Basoglu M, Livanou M, Crnobaric C, Franciskovic T, Suljic E, Duric D, et al. Psychiatric and cognitive effects of war in former Yugoslavia: association of lack of redress for trauma and posttraumatic stress reactions. *JAMA*. 2005;294:580-90. [Medline:16077052](#)
- 33 Filaković P, Mandić N. Social anxiety disorder. In: Hotujac Lj, editor. Croatian consensus group for depression and anxiety disorders. Recognizing and treating depression and anxiety disorders – the role of primary care physician [in Croatian]. Zagreb: Belupo d.d. Koprivnica; 2003, p. 49-57.
- 34 Orsillo S, Raja S, Hammond C. Gender issues in PTSD with comorbid mental health disorders. In: Kimerling R, Ouimette P, Wolfe J, editors. *Gender and PTSD*. New York (NY): The Guilford Press; 2002. p. 207-31.
- 35 Hamner MB. Psychotic features and combat-associated PTSD. *Depress Anxiety*. 1997;5:34-8. [Medline:9250439](#)
- 36 Kaštelan A, Frančišković T, Moro Lj, Rončević-Gržeta I, Grković J, Jurcan V, et al. Psychotic symptoms in combat-related posttraumatic stress disorder. *Mil Med*. Forthcoming 2007.