Consequences of Domestic Violence on Women's Mental Health in Bosnia and Herzegovina

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Aim To assess psychological consequences of domestic violence, and determine the frequency and forms of domestic violence against women in Bosnia and Herzegovina.

Methods The study was carried out in the Tuzla Canton region in the period from 2000 to 2002, and included 283 women aged 43 ± 9.6 years. Out of 283 women, 104 received psychiatric treatment at the Department for Psychiatry of the University Clinical Center Tuzla, 50 women were refugees; and 129 were domicile inhabitants of the Tuzla Canton. Domestic Violence Inventory, Cornell Index, Symptom Checklist-90-Revised, PTSD Checklist Version for Civilians, and Beck Depression Inventory were used for data collection. Basic sociodemographic data and information from the medical documentation of the Department for Psychiatry of the University Clinical Center Tuzla was also collected.

Results Out of 283 women, 215 (75.9%) were physically, psychologically, and sexually abused by their husbands. Among the abused, 107 (50.7%) experienced a combination of various forms of domestic violence. The frequency of domestic violence was high among psychiatric patients (78.3%). Victims of domestic violence had a significantly higher rate of general neuroticism, depression, somatization, sensitivity, obsessive-compulsive symptoms, anxiety, and paranoid tendency than women who were not abused. The prevalence of posttraumatic stress disorder (PTSD) symptoms according to the type of trauma was higher in women with the history of childhood abuse (8/11) and domestic violence (53/67) than in women who experienced war trauma (26/57) and the loss of loved ones (24/83). The majority of 104 psychiatric patients suffered from PTSD in comorbidity with depression (n = 45), followed by depression (n = 17), dissociative disorder (n = 13), psychotic disorder (n = 7), and borderline personality disorder with depression (n = 7). The intensity of psychological symptoms, depression, and Global Severity Index for Psychological Symptoms (GSI) were in significant positive correlation with the frequency of psychological ($r = 0.45$, $P<0.001$), physical ($r = 0.43$, $P<0.001$), and sexual abuse ($r = 0.37$, $P<0.001$).

Conclusion Domestic violence in various forms had long-term consequences on mental health of women. This should be taken into account when treating women with war-related trauma.

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Domestic violence and its consequences for the physical and psychological well-being of women and children have been recognized as an important public health problem (1,2). However, despite the fact that domestic violence has been the focus of research since the 1970s, information about the prevalence of this problem is still scarce in many countries, especially in the developing world. Current studies indicate that 20%-50% of women worldwide have experienced some form of domestic violence in their lifetime (3,4). Consequences of domestic violence, characterized by women's experience of physical, psychological, and sexual injury or threat are manifold. A significant number of studies consider domestic violence as risk factor for health problems, including injury and death (5-8), consequences on pregnancy and newborns (9-12), and on women's mental health (13). Psychological problems associated with domestic violence have been well documented among women who asked for professional help. Among the most frequently reported psychological consequences are depression (14), high suicide risk (15-17), loss of trust, low self-esteem, fear, anxiety, guilt, shame, tension, suspicion, somatic problems, and post-traumatic stress disorder (PTSD) (18).

Domestic violence has been recognized as a problem in Bosnia and Herzegovina for the first time after the end of war in 1995. International Helsinki Federation for Human Rights Report, based on a small number of reported cases from the year 2004, estimated that 25 percent of women were victims of domestic violence (19). Currently, there are no epidemiological studies about the exposure of women to various types of violence. In addition, violence against women, including domestic violence, is still not discussed in public. It is estimated that domestic violence is present in one out of four families in Bosnia and Herzegovina (19).

Our aim was to assess mental health consequences and symptoms of PTSD in women victims of domestic violence who lived in Bosnia and Herzegovina. We analyzed the frequency and types of domestic violence experienced by women either currently or at any time in their lives from current or former intimate partner or boyfriend. Additionally, this study examined the prevalence of domestic violence in women who received psychiatric treatment.

We used the term "domestic violence" to refer to a range of sexually, psychologically, and physically coercive acts used against adult and adolescent women by current or former male intimate partners.

Subjects and methods

The study was carried out in the period from 2000 to 2002 in the Tuzla Canton. Its population of 502 418 inhabitants (266 524 women) includes both domicile and refugee population. As such, this region represents the largest canton in Bosnia and Herzegovina. Data was collected among two groups of women: women in the general population and women who received psychiatric treatment at the Department for Psychiatry of the University Clinical Center Tuzla. The study was approved by the Human Research Ethics Board of the Tuzla University Clinical Center and the Tuzla Canton Ministry of Culture, Sports, and Education.

Subjects

There is a great variation in the study populations for domestic violence research. Many studies include all women within a specific age range (mostly aged 15-49, or over 18 years), whereas other studies include only women who are or were married (20). In this study, according to the definition of domestic violence, we chose the population of women aged over 16 years who were residents of Tuzla Canton. The inclusion criterion was living in Bosnia and Herzegovina during the war (1992-1995), which means that they have been approximately equally exposed to the possibility of traumatic experiences. Women

from the general population and women who received psychiatric treatment were included into the study. The general population group comprised both domicile and refugee women. The reason for separating women refugees from domicile women was that they had more war stressors than domicile women. Women refugees were chosen from refugee camps. At that time, there were 6 refugee camps in the Tuzla Canton with 2352 refugees. For the study purposes, 2 camps were chosen at random: Špionica camp, in the municipality of Srebrenik, and Mihatovići camp in the municipality of Tuzla, with a total of 1101 refugees, 70% of whom were women. Three out of 13 municipalities of Tuzla Canton were chosen at random: Tuzla, Kladanj, and Živinice, with 204 933 residents, 60% of whom were women. It was not possible to obtain the exact information on demographic structure because it has changed significantly (21) since the last census in 1991, mostly because of the 1992-1995 war. In cooperation with local women associations, we organized public lectures on domestic violence for women in each place of the study. After the lectures and presentation of the study project, we asked the women to participate in the study. The women were informed that the information collected would be used only for the purpose of the study, and that the identity of each participant would be protected. In two refugee camps, 90 women attended public lectures and 54 of them accepted to participate in the study. According to Partner Violence Screen questionnaire, 9 of them did not report experiencing domestic violence, and 4 of these 9 refused to further participate in the study. In three municipalities, 310 women attended public lectures and 142 of them accepted participating in the study. According to Partner Violence Screen questionnaire, 82 out of 142 women reported experiencing domestic violence. Further participation in the study was refused by 13 women, 6 of whom had experienced domestic violence. A total of 196 women, both domicile and refugee, agreed to participate in the study, but 17 of them withdrew after completing the screening questionnaire. According to the Partner Violence Screen questionnaire, 127 (64.7%) out of 196 women reported exposure to domestic violence.

The second group of subjects included female patients who received psychiatric treatment at the Department for Psychiatry of the University Clinical Center Tuzla in the period from 1998-1999. Out of a total of 302 female patients who received psychiatric treatment in that period, 120 women were randomly selected and invited to participate in the study. The selection for the study was done by inviting women on every even number of the outpatient protocol, which was common for men and women patients. All invited female patients responded and 26 of them did not report experiencing domestic violence on the Partner Violence Screen questionnaire. Out of those 26 women, 16 refused further participation in the study. According to Partner Violence Screen questionnaire, 94 out of 120 women who received psychiatric treatment experienced domestic violence.

The interviewed women were divided into three subgroups: women refugees (n = 50), domicile women (n = 129), and female patients (n = 104). Regarding marital status, when compared to other subgroups, there were more widows in the subgroup of women refugees (13/50), including women whose husbands were missing. Additionally, the subjects were divided into domicile and refugee population rather than into rural and urban groups since it was more in accordance with the current situation in Bosnia and Herzegovina and the significant ongoing migration of the population (22).

Measuring instruments

Socio-demographic questionnaire was designed for the purpose of this study. The questionnaire included general information about age, parents, siblings, marital status, partners, children, educa-

tion, occupation, employment, living conditions, economic status, life experience, and experience of any kind of emotional, physical, or sexual abuse that they went through before the age of sixteen.

Partner Violence Screen is a brief questionnaire designed for large studies among women (23). The questionnaire is comprised of three short questions regarding the experience or a threat of physical violence, safety in the current relationship, and bad experiences in previous relationships.

Modified Domestic Violence Inventory (24) consists of three parts: Inventory of Psychological Abuse, Inventory of Physical Abuse, and Inventory of Sexual Abuse. The questionnaire has 79 statements related to the exposure to various types of domestic violence in a lifetime: 26 statements are related to physical abuse, 13 statements to sexual abuse, and 40 statements to psychological abuse. The exposure to different types of domestic violence is marked as follows: 0 – never, 1 – once, 2 – two times, 3 – three to five times, 4 – six to ten times, 5 – eleven to twenty times, and 6 – more than twenty times. The frequency of all types of abuse is marked in the following way: no abuse (0), rarely (1 to 3), sometimes (4), often (5 and 6). The Domestic Violence Inventory was used for the purpose of assessing the occurrence of different types of domestic violence rather than as a psychometric instrument.

For measuring psychological symptoms Symptom Checklist-90-R (25) and Cornell Index (26) were used. The Symptom Checklist-90-R is a psychiatric self-report inventory which consists of 90 items answered by the researcher. The 90 items in the questionnaire are scored on a five-point Likert scale and designed primarily to reflect the psychological symptom patterns of psychiatric and medical patients. The items refer to the assessment of index and T values for somatization dimensions, obsessive-compulsive tendencies, depression, anxiety, phobia, interpersonal sensitivity, hostility, paranoid ideations, and psychotic states. The following measures were performed: Global Severity Index, Positive Symptom Total, Positive Symptom Distress Index, and General Score. The Symptom Checklist-90-R is designed for a broad spectrum of populations, ranging from non-patient "normal" populations to medical patients or individuals with psychiatric disorders. It is a measure of current, point-in-time psychological symptom status, not a measure of personality. The reliability coefficient for the Symptom Checklist-90-Revised was 0.96.

Cornell Index is a questionnaire used for quick assessment of psychosomatic problems, tendencies to anxiety, phobia, hypersensitivity, depression, cardio-vascular, inhibitory and gastro-intestinal conversion, obsessive-compulsive tendencies, impulsivity, aggression, and paranoia. The score 0-27 indicated normal level of symptoms, 28-49 moderate level of symptoms, and 50+ severe level of symptoms. Cornell Index was used for the purpose of objectification of psychological symptoms, because it has a control set of statements for assessing the subjects' understanding and tendency to simulate answers. Both instruments were also used among women who received psychiatric treatment. The reason for using both instruments in this group of women was to estimate the mental state of women at the time of the study.

Beck Depression Inventory (27) is a self-assessment questionnaire composed of 21 questions with an answer range of 0-4. The total score is calculated by adding answers values to all 21 questions, with the 0-63 score. The score from 0-9 indicated absence of depression, 10-15 mild depression, 16-19 mild-moderate depression, 20-29 moderate-to-severe depression, and 30+ severe depression. The reliability items for the Back Depression Inventory was 0.94.

PTSD Checklist Version for Civilians (28) is self-reporting rating scale for assessing posttraumatic stress disorder which consists of 17 items and corresponds to the Diagnostic and Statis-

tical Manual of Mental Disorders (DSM-IV) symptoms of PTSD (29). Responses range from 1 (not at all) to 5 (extremely), with responses 3-5 (moderately or above) as symptomatic and responses 1-2 (below moderately) as non-symptomatic. The reliability coefficient for the PTSD Checklist was 0.97. To obtain more information about traumatic events (Criterion A according to DSM-IV criteria for PTSD) we asked about the nature and the time of the traumatic event. We also inquired about description of the traumatic event, duration of the event, when the first symptoms stated in PTSD Checklist appeared, and how long they lasted.

Table 1. Demographic characteristics of 283 women aged over 16 y and living in Tuzla Canton, Bosnia and Herzegovina who experienced no domestic violence and victims of domestic violence at the time of study

Characteristic	No. (%) of women who experienced no domestic violence (n = 68)	experienced domestic violence (n = 215)	total	*P**
Age:				
16-25	6 (8.8)	9 (4.2)	15 (5.3)	0.136
26-35	21 (30.9)	26 (12.1)	47 (16.6)	<0.001
36-45	24 (35.3)	65 (30.2)	89 (31.4)	0.433
46-55	15 (22.1)	97 (45.1)	112 (39.6)	<0.001
>56	2 (2.9)	18 (8.4)	20 (7.1)	0.127
Education:				
none	1 (1.5)	31 (14.4)	32 (11.3)	0.003
elementary school	10 (14.7)	70 (32.6)	80 (28.2)	0.004
high school	42 (61.8)	96 (44.6)	138 (48.8)	0.013
university	15 (22.0)	18 (8.4)	33 (11.7)	0.002
Employment:				
employed	60 (88.2)	104 (48.4)	164 (58.0)	<0.001
unemployed	4 (5.9)	36 (16.7)	40 (14.1)	0.025
housewives	4 (5.9)	61 (28.4)	65 (23.0)	<0.001
retired	0	14 (6.5)	14 (4.9)	0.034
Marital status:				
unmarried	14 (20.6)	10 (4.7)	24 (8.5)	<0.001
married	48 (70.6)	108 (50.3)	156 (55.1)	0.003
divorced	0	11 (5.1)	11 (3.9)	0.057
married but living separated	0	42 (19.5)	42 (14.8)	<0.001
widows	5 (7.3)	22 (10.2)	27 (9.5)	0.481
re-married	1 (1.5)	5 (2.3)	6 (2.1)	0.669
living out of wedlock	0	17 (7.9)	17 (6.1)	0.016
Children:				
none	18 (26.5)	24 (11.2)	42 (14.8)	0.001
one	12 (17.6)	42 (19.5)	54 (19.1)	0.729
two	34 (50.0)	110 (51.2)	144 (50.9)	0.867
three an more	4 (5.9)	39 (18.1)	43 (15.2)	0.014
Monthly income (€):				
none	9 (13.3)	93 (43.3)	102 (36.1)	<0.001
<125	12 (17.6)	52 (24.2)	64 (22.6)	0.261
<300	44 (64.7)	59 (27.4)	103 (36.4)	<0.001
>300	3 (4.4)	11 (5.1)	14 (4.9)	0.815

*χ^2 test.

Information about the subjects' diagnosis and treatment of psychological problems, as assessed by the International Classification of Diseases and Related Health Problems, 10th revision (30), were taken from the clinical records available at the Department of Psychiatry of the Tuzla University Clinical Center.

Statistical analysis

The results for demographic data, experience of domestic violence, and prevalence of PTSD were expressed as percentages (relative numbers), and mean values and standard deviations, and were evaluated using χ^2 test, the Pearson coefficient of correlation, ANOVA, and the Scheffe *post hoc* test. As data for symptoms of neurosis and psychological symptoms did not show normal distribution, the results were presented as medians with 25-75 percentile ranges and analyzed by Kruskal-Wallis test and Mann-Whitney U test. The level of statistical significance was set at $P<0.05$. The data were statistically analyzed with the SPSS statistical software version 10.0 (SPSS Inc., Chicago, IL, USA).

Results

Demographic data and experience of domestic violence

The average age (±standard deviation) of women in the sample was 43 ± 9.6 years. Women who experienced no domestic violence were younger (38.9 ± 9.43) than women victims who experienced it (44.6 ± 9.3) (ANOVA, F = 12.70, $P<0.001$). The groups were heterogeneous with respect to education, occupation, employment, and monthly wages. The largest number of women without education (n = 17) and housewives (n = 37) was found among women refugees. The average marriage duration in the entire sample was 17.43 ± 11.37 years and the average age (±standard deviation) of subjects' partners in the entire sample was 42 ± 12.0 years. There was no difference among the groups of women victims

of domestic violence in the frequency of divorce ($\chi^2_2 = 11.6$; $P = 0.900$) and separation from their husbands ($\chi^2_2 = 10.2$; $P = 0.975$), but there were differences between the group of women victims of domestic violence and the group of women who experienced no domestic violence (Table 1). There were also differences in the educational level, number of children, and monthly income between the group women victims of domestic violence and the group women who experienced no domestic violence (Table 1).

From the total of 283 women, 215 (75.9%) reported that they were exposed to some type of domestic violence at the time of the study: 45 refugees, 94 female patients, and 76 domicile women. According to the Modified Domestic Violence Inventory, 63% women rarely experienced physical violence, 27.9% occasionally, whereas 8.7% experienced this form of violence frequently. Out of 215 women victims of domestic violence 31 (14.4%) experienced frequent psychological abuse, 87 (40.5%) of them sometimes experienced this form of abuse, whereas 82 (38.1.0%) experienced it rarely. The experience of sexual abuse was reported by 123 women (43.5%), and most of them were forced into sexual intercourse (Table 2). Female patients and domicile women victims of domestic violence were significantly more sexually and psychologically abused than women refugees (Table 2).

Table 2. Frequency of domestic violence among women aged over 16 y and living in Tuzla Canton, Bosnia and Herzegovina

Types of domestic violence*	No. (%) of women in the group†				
	refugees (n = 50)	domicile (n = 76)	patients (n = 104)	total	P‡
Physical abuse:	33 (66.0)	60 (78.9)	86 (82.7)	179 (77.8)	0.062
slapping	29 (58.0)	53 (69.7)	71 (68.3)	153 (66.5)	0.345
pushing	11 (22.0)	47 (61.8)	66 (63.5)	124 (53.9)	<0.001
hair pulling	8 (16.0)	35 (46.1)	51 (49.0)	94 (40.9)	<0.001
arm twisting	6 (12.0)	34 (44.7)	43 (41.3)	83 (36.1)	<0.001
pushing to the floor	4 (8.0)	29 (38.2)	51 (49.0)	84 (36.5)	<0.001
hitting	19 (38.0)	49 (64.5)	65 (62.5)	133 (57.8)	0.005
fight	19 (38.0)	46 (60.5)	66 (63.5)	131 (56.9)	0.008
kicking	5 (10.0)	32 (42.1)	51 (49.0)	88 (38.2)	<0.001
strangling	4 (8.0)	22 (28.9)	39 (37.5)	65 (28.3)	<0.001
injuries with other objects	2 (4.0)	19 (25.0)	42 (40.4)	63 (27.4)	<0.001
threatening with a knife	2 (4.0)	21 (27.6)	38 (36.5)	61 (26.5)	<0.001
Sexual abuse:	15 (30.0)	46 (60.5)	62 (59.6)	123 (53.4)	<0.001
forced sex	14 (28.0)	42 (55.3)	58 (55.7)	114 (49.6)	0.002
squeezing of breasts and genitals	1 (2.0)	16 (21.1)	29 (27.9)	46 (20.0)	<0.001
forced oral sex	1 (2.0)	23 (30.3)	22 (21.1)	46 (20.0)	<0.001
forced anal sex	2 (4.0)	19 (25.0)	22 (21.1)	43 (18.7)	0.008
forced to watch porno films	1 (2.0)	10 (13.1)	17 (16.3)	28 (12.2)	0.036
Psychological abuse:	33 (66.0)	73 (96.1)	91 (87.5)	197 (85.6)	<0.001
jealousy	28 (56.0)	63 (82.9)	69 (66.3)	160 (69.5)	0.003
checking	28 (56.0)	61 (80.3)	66 (63.5)	155 (67.4)	0.009
making woman feel worthless	22 (44.0)	62 (81.6)	74 (71.2)	158 (68.7)	<0.001
making woman feel stupid	21 (42.0)	57 (75.0)	76 (73.1)	154 (66.0)	<0.001
mocking	22 (44.0)	58 (76.3)	72 (69.2)	152 (66.1)	<0.001
putting down	17 (34.0)	57 (75.0)	72 (69.2)	146 (63.5)	<0.001
controlling behavior	25 (50.0)	56 (73.7)	59 (56.7)	140 (60.9)	0.014
manipulation and lying	14 (28.0)	55 (72.4)	64 (61.5)	133 (57.8)	<0.001
threatening with murder	5 (10.0)	21 (27.6)	51 (49.0)	77 (33.5)	<0.001
threatening with child murder	2 (4.0)	9 (11.8)	17 (16.3)	28 (12.2).	0.089

*Domestic Violence Inventory (24).
†Refugees – women from the general population who came to live in Tuzla canton as refugees during the 1991-1995 war; domicile – women from the general population with residence in Tuzla canton; patients – female patients who received psychiatric treatment at the Department for Psychiatry of the University Clinical Center Tuzla.
‡χ^2 test.

There was a significant correlation between physical and sexual abuse ($r = 0.62$, $P<0.001$), as well as between psychological and sexual abuse ($r = 0.65$, $P<0.001$). The combination of physical, psychological, and sexual abuse was found in 107 women (49.8%), physical and sexual abuse in 29 women (13.5%), psychological and sexual abuse in 22 (10.2%), whereas physical and psychological abuse were reported by 57 women (26.5%).

Exposure to traumatic events and prevalence of PTSD

Out of 283 women, 245 (86.6%) reported one or more different traumatic experiences. Prevalence of domestic violence as a traumatic experience was higher in female patients and domicile women than in refugee women (39/104 vs 4/50; $\chi^2_1 = 13.72$; $P<0.001$ and 24/76 vs 4/50; $\chi^2_1 = 8.39$; $P = 0.001$). Women refugees had a higher prevalence of war trauma than domicile women and female patients ($\chi^2_2 = 72.43$; $P<0.001$). Eleven out of 283 women were abused in childhood, and 9 of them received psychiatric treatment. Domicile women who experienced no domestic violence mostly suffered a loss of a loved person (22/53). Out of 245 women who experienced different traumatic events, 129 (52.6%)

reported symptoms that met PTSD criteria. The prevalence of PTSD symptoms according to the type of trauma was higher in women with the history of childhood abuse (8/11) and domestic violence (53/67) than in women with traumatic war experiences (26/57) and the loss of loved ones (24/83) ($\chi^2_3 = 46.59$; $P<0.001$). When considering the intensity of PTSD symptoms, mean values of PTSD symptoms were higher in women abused in childhood (2.97 ± 0.82) and with domestic violence experiences (2.67 ± 1.03), than in women with war trauma (2.34 ± 0.99) and a loss of a loved one (1.93 ± 0.77) (Mann-Whitney test, $P<0.05$). Mean values of PTSD symptoms were higher in women refugees and female patients than domicile women victims of domestic violence (ANOVA, Scheffe post hoc test, $F = 49.09$; $P<0.001$).

Psychological symptoms

General neuroticism measured by Cornell Index test was high in 26 and moderate in 30 out of 76 domicile women victims of domestic violence. In 6 domicile women who experienced no domestic violence the level of neuroticism was high, and moderate in 6 of them. There was a significant difference between these two groups regarding the level of neuroticism ($\chi^2_2 = 21.19$; $P<0.001$). High neuroticism was registered most often in female patients (92/104). High general neuroticism was registered in 6 and moderate in 10 out of 50 women refugees. There was a significant difference between women refugees who experienced no domestic violence and domicile women who experienced no domestic violence in the level of general neuroticism ($\chi^2_2 = 26.59$; $P<0.001$). The difference between women refugees victims of domestic violence and domicile women victims of domestic violence was marginally not significant ($\chi^2_2 = 5.94$; $P = 0.051$). Women victims of domestic violence had higher scores of symptoms of neurosis measures by Cornell Index than women who experienced no domestic violence (Table 3). There was a significant correlation between the scale of general neuroticism and physical ($r = 0.47$, $P<0.001$), psychological ($r = 0.47$, $P<0.001$), and sexual abuse ($r = 0.37$, $P<0.001$) in the entire sample.

Serious depression was assessed in 102 (36.1%) of 283 women. The level of depression among domicile women victims of domestic violence was significantly higher than in domicile women who experienced no domestic violence (Table 4). In women refugees victims of domestic violence, depression score was mild to moderate and significantly higher than in do-

Table 3. Differences in symptoms of neurosis measured with Cornell Index among women aged over 16 years living in Tuzla Canton, Bosnia and Herzegovina who experienced no domestic violence and victims of domestic violence*

	Symptom of neurosis (median, 25-75 percentile) in women who								
	experienced no domestic violence				experienced domestic violence				
Symptoms of neurosis	domicile (n = 53)	refugees (n = 5)	patients (n = 10)	total (n = 68)	domicile (n = 76)	refugees (n = 45)	patients (n = 94)	total (n = 215)	P†
General level of neurosis	18.0‡ (13.0-25.0)	25.0 (22.5-64.0)	61.0§ (42.8-70.3)	22.5 (16.0-43.8)	43.0‡ (25.3-62.3)	50.0 (26.5-70.0)	78.0§ (66.0-86.0)	63.0 (38.0-80.0)	<0.001
Anxiety	36.0‡ (18.0-54.0)	63.0 (27.0-94.5)	95.0 (73.0-86.0)	45.0 (27.0-72.8)	64.0‡ (36.0-73.0)	73.0 (45.0-95.0)	91.0 (73.0-99.0)	81.0 (54.0-91.0)	<0.001
Phobia	14.0‡ (0.0-36.0)	28.0 (7.0-85.0)	64.0§ (14.0-86.0)	14.0 (0.0-57.0)	57.0‡ (29.0-86.0)	57.0 (21.0-85.0)	99.0§ (86.0-99.0)	85.0 (43.0-99.0)	<0.001
Hypersensitivity	17.0‡ (4.0-28.5)	33.0 (16.0-49.5)	58.0§ (41.8-77.0)	20.5 (8.0-41.8)	46.0‡ (17.0-67.0)	42.0 (20.0-74.0)	83.0§ (75.0-92.0)	67.0 (33.0-85.0)	<0.001
Depression	0.0‡ (0.0-29.0)	14.0 (0.0-92.0)	92.5 (32.3-99.0)	0.0 (0.0-53.5)	50.0‡ (0.0-86.0)	85.0 (14.0-99.0)	99.0 (86.0-99.0)	86.0 (38.8-99.0)	<0.001
Cardio-vascular conversion	0.0‡ (0.0-18.0)	0.0 (0.0-90.0)	81.0 (58.0-90.0)	0.0 (0.0-54.0)	54.0‡ (18.0-90.0)	18.0 (0.0-90.0)	90.0 (72.0-99.0)	72.0 (31.5-90.0)	<0.001
Inhibitory conversion	12.0 (0.0-12.0)	0.0 (0.0-18.0)	43.0§ (33.3-55.0)	12.0 (0.0-25.0)	12.0 (12.0-37.0)	24.0 (0.0-42.5)	62.0§ (43.0-74.0)	37.0 (12.0-62.0)	<0.001
Gastro-intestinal conversion	0.0‡ (0.0-13.5)	36.0 (13.5-54.0)	27.0§ (13.5-52.0)	9.0 (0.0-27.0)	18.0‡ (0.0-45.0)	9.0 (0.0-54.0)	63.5§ (36.0-77.0)	36.0 (0.0-64.0)	<0.001
Hypochondria	8.0‡ (0.0-31.0)	23.0 (7.5-57.0)	72.5§ (34.3-77.0)	15.0 (0.0-38.0)	54.0‡ (15.0-77.0)	23.0 (7.0-84.0)	92.0§ (77.0-99.0)	76.0 (31.0-92.0)	<0.001
Obsessive-compulsive tendencies	17.0‡ (0.0-33.0)	66.0 (24.5-66.0)	75.0 (29.0-87.0)	17.0 (16.0-45.8)	50.0‡ (17.0-67.0)	66.0 (33.0-83.0)	83.0 (67.0-99.0)	67.0 (33.0-83.0)	<0.001
Impulsive-aggressive tendencies	33.0‡ (33.0-45.5)	49.0 (41.0-57.5)	62.0 (50.0-69.0)	42.0 (33.0-50.0)	50.0‡ (34.0)	58.0 (41.0-66.0)	74.0 (58.0-83.0)	58.0 (42.0-75.0)	<0.001
Paranoid tendencies	21.0‡ (10.0-29.5)	42.0 (41.5-63.50	36.0§ (23.5-41.0)	21.0 (10.0-31.0)	31.0‡ (21.0-41.03)	57.0 (36.0-71.0)	51.0§ (31.0-62.0)	41.0 (28.0-57.0)	<0.001

*Cornell Index (26). Participants were devided into 3 subgroups: domicile women (n=50), refugee women (n=50), and psychiatric outpatients (n=104).
†Kruskal-Wallis test.
‡$P \leq 0.05$ for domicile women victims of domestic violence vs domicile women who experienced no domestic violence (Mann-Whitney U test).
§$P \leq 0.05$ for female patients, victims of domestic violence vs female patients experienced no domestic violence (Mann-Whitney U test).

micile women who experienced no domestic violence (Table 4), and slightly but not significantly ($\chi^2_1 = 6.57$; $P = 0.160$) lower than in domicile women victims of domestic violence. There was no significant difference in the level of depression among the subgroup of refugee women ($\chi^2_1 = 3.56$; $P = 0.168$).

Women victims of domestic violence manifested significantly more intense symptoms of somatization, depression, sensitivity, paranoia, obsessive-compulsive symptoms, and anxiety, measured by the Symptom Checklist-90-Revised than women who experienced no domestic violence (Table 5). There was no significant differ-

Table 4. Prevalence of depression measured with Beck's self-assessment scale among women aged over 16 years living in Tuzla Canton, Bosnia and Herzegovina who experienced no domestic violence and victims of domestic violence*

	No. (%) of women who								
	experienced no domestic violence				experienced domestic violence				
Level of depression	domicile (n = 53) ‡	refugees (n = 5)	outpatient (n = 10)	total (n = 68)	domicile (n = 76)‡	refugees (n = 45)	outpatient (n = 94)	total (n = 215)	P†
Absence	40 (75.5)	4 (80.0)	2 (20.0)	46 (67.6)	19 (25.0)	20 (44.4)	3 (3.2)	42 (19.5)	<0.001
Mild	9 (16.9)	1 (20.0)	0	10 (14.7)	17 (22.4)	4 (8.9)	4 (4.3)	25 (11.6)	0.501
Mild-moderate	1 (1.9)	0	1 (10.0)	2 (2.9)	9 (11.8)	4 (8.9)	3 (3.2)	16 (7.4)	0.184
Moderate-serious	2 (3.8)	0		2 (2.9)	16 (21.1)	9 (20.0)	13 (13.8)	38 (17.8)	0.002
Serious	1 (1.9)	0	7 (70.0)	8 (11.8)	15 (19.7)	8 (17.8)	71 (75.5)	94 (43.7)	<0.001

*Score of Beck depression inventory (27). Participants were devided into 3 subgroups: domicile women (n=129), refugee women (n=50), and psychiatric outpatients (n=104).
†χ^2 test for women experienced no domestic violence vs women victims of domestic violence.
‡P<0.001 for domicile women victims of domestic violence vs domicile women experienced no domestic violence (Mann-Whitney U test).

Table 5. Differences in psychological symptoms measured with Check list of symptoms (SCL-90-R) among women aged over 16 years living in Tuzla Canton, Bosnia and Herzegovina who experienced no domestic violence and victims of domestic violence*

	Psychological symptom (median, interquartile range) in women who								
	experienced no domestic violence				experienced domestic violence				
Psychological symptoms	domicile (n = 53)‡	refugees (n = 5)	patients (n = 10)	total (n = 68)	domicile (n = 76)‡	refugees (n = 45)	patients (n = 94)	total (n = 215)	P†
Somatization	0.50 (0.16-0.91)	1.08 (0.33-1.41)	2.41§ (0.56-2.85)	0.58 (0.18-1.12)	1.62 (0.91-2.41)	1.25 (0.50-1.95)	3.00§ (2.33-3.58)	2.16 (1.16-3.08)	<0.001
Obsessive-compulsive tendencies	0.40 (0.20-0.95)	1.30 (0.40-1.85)	2.75 (1.57-3.20)	0.60 (0.20-1.20)	1.35 (0.72-2.17)	1.40 (0.80-2.20)	2.90 (2.30-3.30)	2.16 (2.10-3.08)	<0.001
Sensitivity	0.66 (0.33-1.00)	0.88 (0.38-1.61)	2.61 (1.44-3.02)	0.66 (0.33-1.30)	1.44 (0.88-2.11)	1.66 (1.00-2.44)	2.50 (1.86-3.11)	2.00 (1.11-2.66)	<0.001
Depression	0.38 (0.15-0.84)	1.00 (0.76-1.50)	2.07§ (1.28-2.92)	0.53 (0.15-1.21)	1.50 (0.84-2.23)	1.30 (0.76-2.30)	2.76§ (2.15-3.30)	2.15 (1.30-2.84)	<0.001
Anxiety	0.30 (0.00-0.75)	0.80 (0.55-1.85)	2.65 (1.37-2.95)	0.40 (0.10-1.17)	1.10 (0.70-2.07)	1.40 (0.80-2.15)	2.85 (2.17-3.60)	2.00 (0.90-3.00)	<0.001
Hostility	0.33 (0.00-0.50)	0.83 (0.58-9.91)	1.58 (0.83-2.16)	0.33 (0.00-0.83)	0.83 (0.37-1.45)	1.00 (0.50-1.33)	1.83 (1.16-2.66)	1.16 (0.66-2.00)	<0.001
Phobia	0.14 (0.00-0.28)	0.71 (0.21-1.42)	2.07 (0.14-2.89)	1.14 (0.00-1.00)	0.71 (0.28-1.28)	1.00 (0.64-2.00)	2.42 (1.67-3.14)	1.57 (0.71-2.57)	<0.001
Paranoia	0.33 (0.16-1.00)	1.16 (0.83-1.41)	2.08 (1.37-2.75)	0.66 (0.16-1.33)	1.50 (0.66-2.00)	1.16 (0.66-1.75)	2.25 (1.66-2.83)	1.83 (1.00-2.50)	<0.001
Psychosis	0.10 (0.00-0.35)	0.50 (0.15-1.05)	1.75 (0.62-2.37)	0.20 (0.00-0.67)	0.60 (0.20-1.17)	0.70 (0.30-1.00)	1.80 (1.30-2.50)	1.10 (0.40-1.90)	<0.001
Extra scale	0.42 (0.00-0.71)	0.57 (0.57-1.35)	1.78§ (1.00-2.35)	0.57 (0.00-1.07)	1.21 (0.75-1.85)	1.28 (0.57-2.00)	2.35§ (1.71-2.85)	1.71 (1.00-2.42)	<0.001
Global Score	37.00 (15.50-61.50)	83.00 (49.50-124.00)	206.00 (128.00-230.25)	44.00 (19.25-86.50)	118.50 (72.50-168.50)	118.00 (69.50-168.00)	228.00 (181.25-272.00)	161.00 (101.00-231.00)	<0.001
GSI	0.41 (0.18-0.68)	0.92 (0.55-1.37)	2.29 (1.42-2.55)	0.48 (0.22-0.95)	1.31 (0.79-1.87)	1.31 (0.76-1.86)	2.53 (2.02-3.02)	1.79 (1.12-2.53)	<0.001
PST	23.00 (12.50-40.00)	41.00 (30.50-56.00)	67.00§ (49.75-80.25))	27.50 (15.50-48.00)	53.50 (39.50-70.75)	53.00 (41.00-67.00)	78.00§ (69.75-84.00)	68.00 (48.00-78.00)	<0.001
PSDI	1.41 (1.15-1.92)	1.87 (1.66-2.24)	3.02 (2.55-3.27)	1.59 (1.23-2.19)	2.15 (1.67-2.56)	2.27 (1.78-2.62)	3.04 (2.58-3.33)	2.54 (2.04-3.11)	<0.001

*Check list of symptoms (SCL-90-R) (25). Participants were devided into 3 subgroups: domicile women (n=129), refugee women (n=50), and psychiatric outpatients (n=104). Abbreviations: GSI – Global severity index; PST – Positive symptom total; PSDI – Positive symptom distress index.
†Kruskal-Wallis test for women victims of domestic violence vs women experienced no domestic violence.
‡ $P \leq 0.001$ for domicile women victims of domestic violence vs domicile women experienced no domestic violence (Mann-Whitney U test).
§$P \leq 0.05$ for female patients, victims of domestic violence vs female patients experienced no domestic violence (Mann-Whitney U test)

ence in hostility between women refugees and domicile women victims of domestic violence. Phobia and hostility were more intense in women refugees than in domicile women victims of domestic violence, and both subgroups displayed higher intensity of symptoms than the group of women who experienced no domestic violence (Table 5). Domicile women victims of domestic violence showed significantly higher scores on the Global Severity Index (GSI) than women who experienced no domestic violence (mean difference = 0.88; 95% CI, 0.43-1.14; $P<0.001$), but significantly lower than female patients (mean difference = 1.09; 95% CI 0.78-1.39; $P<0.001$). There was no significant difference in GSI between domicile and refugee women victims of domestic violence (mean difference = 3.85E-02; 95% CI, 0.305-0.382; $P = 1.000$). Additionally, a significant correlation was found among GSI and physical abuse ($r = 0.43$; $P<0.001$), psychological abuse ($r = 0.45$, $P<0.001$), and sexual abuse ($r = 0.37$; $P<0.001$).

Discussion

Our study showed that domestic violence as a traumatic experience was associated with various mental disturbances in all women victims of domestic violence in the study. We found moderate to high neuroticism, moderate to severe depression, higher intensity of psychological symptoms of somatization, anxiety, obsessive-compulsive symptoms, sensitivity, and paranoid tendencies, with moderate score on global severity index of symptoms among women victims of domestic violence. Strong positive correlation between the level of neuroticism, depression, and global severity index of symptom and frequency of physical, psychological, and sexual abuse was determined. Some studies found correlations between family incomes, level of education, employment, age, and marital status and domestic violence (31,32), but not others (20). In our study, the significant age difference and significant marital status difference, as well as significant difference in the level of education, employment, and monthly income between women victims of domestic violence and women who experienced no domestic violence was probably a consequence of the methods used in selecting women for this study. However, in this study a significant number of women refugees had lower educational level, were unemployed, and without any monthly income. Higher general neuroticism and higher mean values of psychological symptoms in domicile women victims of domestic violence than in women who experienced no domestic violence, and positive correlation between the intensity of symptoms and frequency of domestic violence indicate that domestic violence increases the risk for occurrence of psychological symptoms (20,33-35). The association between domestic violence, depression, and anxiety has already been determined (36-38). The association between domestic violence and depression in this study was indicated by the high frequency of domestic violence in female patients who were diagnosed with depression according to the ICD-10 criteria (39). In this study, the prevalence of depression and anxiety in women refugees victims of domestic violence and women refugees who experienced no domestic violence was similar to that of domicile women victims of domestic violence. We expected higher prevalence of symptoms of depression, anxiety, and somatization in women refugees because of traumatic war experiences and long-term psychological consequences of war trauma (40), since they also experienced domestic violence. Domicile women victims of domestic violence were more often and in higher percentage sexually and psychologically abused in marriage than women refugees, which may explain similar prevalence of symptoms of depression, anxiety, and somatization in both subgroups of women. The relatively similar prevalence of symptoms of depression, anxiety, and somatization in those two subgroups can be explained by the fact that women refugees went

through a range of disturbing experiences such as leaving their homes, witnessing war events during the exile, and living in refugee camps while waiting to return to their pre-war places of residence. This may also explain the similarity of the prevalence and the intensity of obsessive-compulsive symptoms and sensitivity in women refugees and domicile women victims of domestic violence. The prevalence of PTSD was greater among women who suffered several types of trauma (domestic violence and war trauma), child abuse, and domestic violence than in women with war trauma and the loss of a loved person. Sharhabani-Arzy et al (41) found that 47 out of 91 women with domestic violence experiences in Israel suffered from PTSD, a finding similar to the results of our study. We found higher intensity of PTSD symptoms in women refugees and female patients than in domicile women victims of domestic violence. An explanation for this may be a high percentage of women refugees who experienced war trauma, the loss of a loved one, and domestic violence (42). A similar explanation can be given for female patients. However, high percentage of female patients was abused in childhood and had more traumatic experiences. Childhood abuse, especially of sexual kind, is connected with psychopathology and revictimization in adult life (43-46). The prevalence of PTSD, in comorbidity with depression, as well as depression alone, was high in female patients, which related to the high frequency of traumatic experiences in these groups.

Many studies (38,47-50) found that women who experienced domestic abuse showed symptoms of different psychiatric problems such as depression, general anxiety, PTSD, and drug and alcohol dependency. In the present study, drug and alcohol dependency and personality problems were detected only in 4 patients, 3 of whom experienced domestic violence. The results of our study, which examined the frequency of various forms of domestic violence, are similar to those obtained in other studies (51-53). Since this is the first such study focused on women's population in Bosnia and Herzegovina, it is not possible to determine to what extent the experience of war was related to the occurrence of domestic violence.

There are several methodological limitations to this study. First, the measurement of reported domestic violence was not sensitive enough. We examined neither the context nor actual physical injuries. We used modified Domestic Violence Inventory (DVI), as we considered it more appropriate for identifying forms of domestic violence in this region than Conflict Tactics Scale (CTS) (54), which has not been adapted to the specific cultural environment and women's social role in Bosnia and Herzegovina. Second, the measurement of reported childhood abuse was also not sensitive enough. An interview with questions about the experience of any kind of emotional, physical, or sexual abuse before the age of 16 was used. Subjects answered "yes" or "no" to each question. Third, the Harvard Trauma Questionnaire (HTQ) has been used in Bosnia and Herzegovina but it was adapted for war and refugee trauma. There is no standardized psychometric instrument for civilian trauma for Bosnia and Herzegovina, so PTSD Checklist-Civilians Version (PCL-C) was used instead. Fourthly, a sample of women from the general population was not representative for assessing the prevalence of domestic violence in general population and the obtained results indicate that domestic violence is still reluctantly reported. Fifthly, although mental consequences of domestic violence on women victims were analyzed in the study, the impact of war stressors could not have been avoided.

These limitations suggest the importance of conducting national studies on the prevalence and consequences of domestic violence in women from both general and psychiatric population. The established relationship between domestic violence and the occurrence of psychological symptoms indicates that domestic violence can

cause long-term psychological effects and that domestic violence is a predictor of psychological problems.

In conclusion, the results from our study indicate that domestic violence is a serious public health problem in Bosnia and Herzegovina, with deep and lasting consequences on the mental health of women. Significant number of women suffered from anxiety, depression, and PTSD, which were often comorbid. The findings of this study may be used as recommendations for establishing health protocols with an aim of early detection of victims of domestic violence and the prevention of its consequences.

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