

## SEXUAL DYSFUNCTIONS IN BOSNIAN WAR VETERANS

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### SUMMARY

*Sexual functioning of war veterans is significantly under-explored. During devastating aggression on Bosnia-Herzegovina (BiH) around 400 thousand soldiers were included in combats. It is estimated that more than 100 000 persons were killed, and more than 60 000 them were soldiers. Vast majority of them were deployed since war is ended. We found high prevalence of sexual dysfunctions in war veterans. Also significant difference in several areas of sexual functioning between war veterans with and without symptoms of posttraumatic stress disorder was found.*

**Key words:** sexual dysfunction - war - veterans

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### INTRODUCTION

Devastating character of aggression on Bosnia-Herzegovina (B&H) destroyed country badly. It is estimated that between 95.940-104.732 persons were killed, among them between 57701-62.626 soldiers. (Zwierchowski & Tabeau 2010, Tokača 2012) There is no collected data of wounded persons during the war or data of veterans with permanent physical invalidity estimates around 135000. Also there is no final number of persons that participated war as soldiers. It estimates around 350000-450000 soldiers were deployed in combats during the war (Ramet 2006, 2010, Finlan 2004). It is almost every third adult man in Bosnia. Most of survivors experienced and witnessed heavy fights, loses, capturing or torturing. Such high number of military employed man in such intensive battles had repercussions on mental health. Under burden of existential problems in deteriorated economy in post war B&H, aspects of quality of life were forgotten. Sexual dysfunction is one of unrecognized and neglected consequence of exposure to combat and traumatic stress. Such high prevalence of war veterans in B&H, the significance of sexuality for ones' perception of quality of life, and a lack of relevant studies all point to the importance of studying this domain of veterans' life.

Previous studies have suggested that sexual dysfunction is associated with trauma-related mental illness, including PTSD (Solursh & Solursh 1994, Letourneau et al. 1997, Cosgrove et al. 2002, Ahmadi et al. 2006, Antičević & Britvić 2008, Breyer et al. 2014) In a population-based cohort study on 405.275 war veterans returned from recent military service in Iraq and Afghanistan Breyer et al. (2014) report that compared with those with no mental health diagnoses or a mental health diagnosis other than PTSD, those with PTSD

were more likely to have ED; have been prescribed medication for sexual dysfunction; or visited a urologist for sexual dysfunction. After adjusting for potential confounding variables, mental health diagnoses remained independently associated with sexual dysfunction, and the magnitude of this association was greater for PTSD than for other types of mental health diagnoses.

Despite the high prevalence of sexual health problems in returning veterans in previous studies, and the central importance of sexual well-being to self-esteem and quality of life in this age group, this is first study on sexual dysfunctions among Bosnian veterans. This may reflect fact that sex is still taboo and sexual dysfunction is a highly stigmatized condition and, as such, is under-reported and understudied.

### SUBJECTS AND METHODS

To determine frequency and severity of sexual dysfunction in war veterans with and without symptoms of PTSD, and to compare results of the two groups. It was hypothesized that war veterans with PTSD have higher frequency and severity of the sexual dysfunctions. The prediction was based on results of the earlier studies that indicate an increased level of sexual problems in people with PTSD (Kaplan 1988, 1989, Kotler et al. 2000, Cosgrove et al. 2002). Also to determine other factors that could impact occurrence of sexual dysfunctions.

To assess impact of PTSD symptoms in occurrence of sexual dysfunctions.

#### Subjects

We invited 350 veterans of war to participate study and 154 of them responded. Research including criteria was: age 30 to 55 years; having permanent sexual partner for at least 6 months; having no other diagnosed

somatic or psychiatric disorder; not using medication that can cause sexual dysfunction; not alcohol or drugs addiction or abusing. Out of total number of respondents (154) 49 of them did not meet including criteria or incompletely filled subsequent verification tests. Sample of 105 veterans were divided in two groups based on results of Harvard Trauma Questionnaire (HTQ): Bosnia-Herzegovina Version (Allden et al. 1998): PTSD group of war veterans with symptoms of PTSD counted 61 member and No PTSD group of war veterans without symptoms of PTSD counted 44 members.

## Instruments

*Harvard Trauma Questionnaire (HTQ): Bosnia-Herzegovina (BiH) Version* (Allden et al. 1998) is a measuring instrument that is applicable to various traumatic experiences and emotional problems that are believed to be directly associated with the trauma. It consists of four parts. The first part contains questions about the traumatic events, with listed 46 possible traumatic events, to which a respondent responds with "yes" or "no". The second part is consisted of two questions in which respondents are asked to present a subjective description of the most horrible experience. The third part refers to the injury of the brain. These three parts do not score. The fourth section (Part IV) contains 40 symptom items related to trauma experience. The first 16 items were derived from DSM-IV criteria for PTSD. These symptoms include dimensions of re-experiencing, avoidance and arousal symptomatology. An interview with a PTSD score and/or a total score of 2.5 is generally considered 'checklist-positive' for PTSD (Mollica et al. 1992). The cut-off score of 2.5 has been the standard for several versions of the HTQ. The additional 24 items refer to the impact of trauma on an individual's perception of her/his ability to function in everyday life. The scale for each question in this section is rated 1 to 4 (1 - "Not at all," 2 - "A little," 3 - "Quite a bit," 4 - "Extremely"). In this study, the HTQ appears to be reliable and internally consistent with Cronbach's alpha 0.948 for total PTSD and alpha 0.955 for the level of self-perceived ability for everyday functioning.

*International Index of Erectile Function (IIEF)* (Rosen et al. 1997) is self-administered questionnaire of 15 questions. It is used to assess five domains of sexual functioning: a) erectile function (EF) refers to the first five and fifteenth question, b) intercourse satisfaction, related to the sixth, seventh and eighth question c) orgasmic function, the ninth and tenth question d) sexual desire, eleven and twelve questions and e) overall sexual satisfaction, thirteenth and fourteenth question. Responses to the first ten questions are scored from 0 to 5 and respond to the other five questions are scored from 1 to 5. The average results are calculated in field of erectile functioning. Psychometric validation has proved a great degree of confidence (and international consistency and reliability of

test) in clinical and nonclinical samples. Sensitivity and specificity are satisfying (Cappelleri et al. 1999). Value of EF results 26 to 30 are considered normal, while the results of 6 to 25 indicate erectile dysfunction (ED). The EF score is used to determine severity of dysfunction in all domains of sexual functions (severe, moderate, mild to moderate, mild and no dysfunction). Internal consistency for this sample was high with Cronbach's alphas for the five domains ranging from 0.667 to 0.935, with an overall alpha of 0.937.

*Sociodemographic data questionnaire* designed for this study which contains questions about age (date of birth), status of sexual relationship (Do you have permanent sexual partner in last six months?), education level (What school did you accomplished?), employment and occupation (Are you employed? If yes, what kind of job do you work?), economic status (What are your monthly incomes), duration of soldier status in war (How long have you spent in war as soldier?), medical and mental disorders (Do you have verified any other medical or mental disorder than PTSD?), medication (Do you use some medications? If yes which?), alcohol and nicotine use (Do you use alcohol/cigarettes? If yes how many? (options)).

## Procedure

Testing was voluntarily and participants signed voluntary consent at first. The questionnaires were fulfilled singly and in specific order: first Socio-demographic questionnaire, than HTQ and finally IIEF. All tests were explained before the testing. Participants had as much time as they needed. One experimenter was in the room with them whole testing time. They were instructed to ask experimenter for eventually questions or misunderstandings. The study was approved by the Ethical Committee on Human Research, University Clinical Center Tuzla, Bosnia-Herzegovina.

## Statistical Analysis

Variables were evaluated descriptively (mean  $\pm$  standard deviation (SD) of frequencies). Differences between groups were tested by t-test and  $\chi^2$  test. Correlation between groups and variables were tested by Pearson test of correlation. A linear regression analysis was conducted to investigate the prediction of sexual dysfunction severity using socio-demographic characteristics, traumatic experiences, and score of PTSD symptoms. The level of significance was set  $p < 0.05$ . Statistical analyses were performed with the Statistical Package for the Social Sciences (SPSS), version 10.0.

## RESULTS

### Socio-demographic factors of importance

The average of the participants in the sample of war veterans was  $40.84 \pm 5.94$  and ranged from 30 to 55 years.

The majority of the participants in total sample were married (95.2%), have had children (93.3%), was with secondary (42.9%) or primary school (37.1%), unemployed (77.1%), lived in an apartment (70.5%) and rural origin (66.7%), occasionally consumed alcohol (64.8%), smoked (62.9%), and had more than three years of combat experience (76.2%). The significant difference between non PTSD and PTSD group of war veterans was observed in employment status ( $\chi^2=7.836$ ,  $p=0.005$ , Exact Fisher = 0.009), the number of participants regarding the average monthly incomes ( $\chi^2=6.575$ ,  $p=0.010$ , Exact Fisher = 0.016) and in taking medications ( $\chi^2=10.812$ ,  $p=0.001$ , Exact Fisher = 0.001) (Table 1). Veterans in the PTSD group used anxiolytics and drugs for pain significantly more frequent than veterans in non PTSD group.

### Trauma exposure, PTSD symptomatology and self-perception of ability to function in everyday life

According to the HTQ Part I, the participants from our sample experienced an average of  $13.41 \pm 7.21$  war trauma events ranging from 3 to 38, among which the group of war veterans with PTSD have had a significantly higher number of traumatic events ( $15.92 \pm 7.34$ ) than non PTSD ( $9.93 \pm 5.40$ ) ( $F[1, 104]=21.035$ ,  $p<0.001$ ). The most common events in total sample included direct exposure to shelling (98.1%), frequent sniper fire (89.5%), lack of food or water (85.7%), lack of shelter (81.0%), ill health without access to medical care (54.3%), murder friend due to combat (78.1%), murder family members

**Table 1.** Socio-demographic factors in the sample of Bosnian war veterans (N=105)

Socioeconomic variables	Number (%) of war veterans			p-value
	No PTSD (n=44)	PTSD (n=61)	Total (N=105)	
Age (M±SD)	39.89±6.25	41.52±5.65	40.84±5.94	F=1.965, p=0.164
Marital status				$\chi^2=1.035$ , p=0.309
Married	43	57	100 (95.2)	
Unmarried	1	4	5 (4.8)	
Children				$\chi^2=0.548$ , p=0.459
Yes	42	56	98 (93.3)	
No	2	5	7 (6.7)	
Partner relations				$\chi^2=3.754$ , p=0.153
Good	33	35	68 (64.8)	
Medium	9	19	28 (26.6)	
Bad	2	7	9 (8.6)	
Education				$\chi^2=0.505$ , p=0.166
No education	6	13	19 (18.1)	
Primary school	14	25	39 (37.1)	
Secondary school	22	23	45 (42.9)	
Higher education	2	-	2 (1.9)	
Employment status				$\chi^2=7.836$ , p=0.005
Employed	16	8	24 (22.9)	
Unemployed	28	53	81 (77.1)	
Monthly incomes (in BAM*)				$\chi^2=6.575$ , p=0.010
Less than 600**	29	53	82 (78.1)	
Higher than 600	15	8	23 (21.9)	
Place of residence				$\chi^2=0.020$ , p=0.889
Urban	15	20	35 (33.3)	
Rural	29	41	70 (66.7)	
Consuming alcohol				$\chi^2=0.383$ , p=0.536
Yes	27	41	68 (64.8)	
No	17	20	37 (35.2)	
Smoking				$\chi^2=0.460$ , p=0.498
Yes	26	40	66 (62.9)	
No	18	21	39 (37.1)	
Medicaments				$\chi^2=10.812$ , p=0.001
Yes	1	16	17 (16.2)	
No	43	45	88 (83.8)	
Duration of combat experience (years)				$\chi^2=0.059$ , p=0.808
One to three	11	14	25 (23.8)	
More than three	33	47	80 (76.2)	

\*BAM – Bosnian Convertible Mark (100 BAM = 51.13 EUR (Euro)); \*\*The approximate average salary in B&H for 2007 (Agency for Statistics of Bosnia and Herzegovina, <http://www.bhas.ba/?lang=en>); M – Mean; SD = Standard deviation; PAS – psychoactive substances; PTSD – posttraumatic stress disorder

**Table 2.** Frequency and severity of sexual dysfunction in sample of Bosnian war veterans (N=105)

Domain of sexual functions	Number (%) of war veterans who No PTSD (n=44)	PTSD (n=61)	Total n (%)	OR (95%CI)	p-value
Erectile function (M±SD)	25.82±4.44	19.41±5.02	22.09±5.73		F=45.751 p<0.001
No dysfunction (25-30)	31 (70.5)	13 (21.3)	44 (41.9)	8.8 (3.6-21.5)	$\chi^2=25.358$ p<0.001
Mild (19-24)	9 (20.5)	20 (32.8)	29 (27.6)	1.8 (0.8-4.7)	$\chi^2=1.945$ p=0.163
Mild to moderate (13-18)	4 (9.1)	22 (36.1)	26 (24.8)	5.6 (1.8-17.9)	$\chi^2=9.984$ p=0.002
Moderate (7-12)	-	6 (9.8)	6 (5.7)	-	$\chi^2=4.59$ p=0.032
Severe (0-6)	-	-	-	-	-
Intercourse satisfaction (M±SD)	10.84±2.57	8.57±2.84			F=17.602 P<0.001
No dysfunction (13-15)	11 (10-5)	5 (4.8)	16 (15.2)	3.7 (1.2-11.7)	$\chi^2=5.588$ p=0.018
Mild (10-12)	20 (45.5)	15 (24.6)	35 (33.3)	0.4 (0.2-0.9)	$\chi^2=5.007$ p=0.025
Mild to moderate (7-9)	11 (25.0)	27 (44.3)	38 (36.2)	2.4 (1.0-5.6)	$\chi^2=4.107$ p=0.043
Moderate (4-6)	2 (4.5)	14 (23.0)	16 (15.2)	6.3 (1.3-29.1)	$\chi^2=6.074$ p=0.010
Severe (0-3)	-	-	-	-	-
Orgazmic function (M±SD)	8.29±2.29	6.70±2.36			F=11.855 p=0.001
No dysfunction (9-10)	27 (25.7)	13 (12.4)	40 (38.1)	5.8 (2.5-13.8)	$\chi^2=17.388$ p<0.001
Mild (7-8)	9 (20.5)	21 (34.4)	30 (28.6)	2.0 (0.8-5.0)	$\chi^2=2.445$ p=0.118
Mild to moderate (5-6)	2 (4.5)	15 (24.6)	17 (16.2)	6.8 (1.5-31.7)	$\chi^2=7.569$ p=0.006
Moderate (3-4)	5 (11.4)	8 (13.1)	13 (12.4)	1.1 (0.4-3.9)	$\chi^2=0.072$ p=0.788
Severe (0-2)	1 (2.3)	4 (6.6)	5 (4.8)	3.0 (0.3-27.9)	$\chi^2=1.035$ p=0.309
Sexual desire (M±SD)	7.93±1.66	6.44±1.69			F=20.145 p<0.001
No dysfunction (9-10)	16 (15.2)	5 (4.8)	21 (20.0)	6.4 (2.1-19.2)	$\chi^2=12.675$ p<0.001
Mild (7-8)	20 (45.5)	23 (37.7)	43 (41.0)	0.7 (0.3-1.6)	$\chi^2=0.635$ p=0.426
Mild to moderate (5-6)	6 (13.6)	26 (42.6)	32 (30.5)	4.7 (1.7-12.8)	$\chi^2=10.137$ p=0.001
Moderate (3-4)	2 (4.5)	6 (9.8)	8 (7.6)	2.3 (0.4-11.9)	$\chi^2=1.017$ p=0.313
Severe (0-2)	-	1 (1.6)	1 (1.0)	-	$\chi^2=0.728$ p=0.393
Overall satisfaction (M±SD)	8.68±1.89	7.21±2.12			F=13.402 p<0.001
No dysfunction (9-10)	28 (26.7)	16 (15.2)	44 (41.9)	4.9 (2.1-11.3)	$\chi^2=14.692$ p<0.001
Mild (7-8)	12 (27.3)	22 (36.1)	34 (32.3)	1.5 (0.7-3.5)	$\chi^2=0.903$ p=0.342
Mild to moderate (5-6)	2 (4.5)	16 (26.2)	18 (17.1)	7.5 (1.6-34.5)	$\chi^2=8.462$ p=0.004
Moderate (3-4)	-	5 (8.2)	5 (4.8)	-	$\chi^2=3.787$ p=0.052
Severe (0-2)	2 (4.5)	2 (3.3)	4 (3.8)	0.7 (0.1-5.3)	$\chi^2=0.112$ p=0.738

PTSD – Posttraumatic Stress Disorder; M – Mean; SD – Standard Deviation; OR – Odds Ratio; CI - Confidence Interval

**Table 3.** Predictors of sexual dysfunction in the sample of war veterans (N=105)

Predictors	Erectile function		Intercourse satisfaction		Orgasmic function		Sexual desire		Overall satisfaction	
	$\beta$	p	$\beta$	p	$\beta$	p	$\beta$	p	$\beta$	p
Age	-0.235	0.006	-0.115	0.218	-0.034	0.731	-0.173	0.060	-0.417	<0.001
Medication	-0.011	0.897	-0.072	0.454	0.079	0.437	-0.038	0.689	0.022	0.792
Alcohol	-0.022	0.784	-0.103	0.249	-0.094	0.323	0.090	0.303	-0.095	0.222
Smoking	0.125	0.125	-0.241	0.008	0.157	0.097	0.016	0.855	0.193	0.014
War-related trauma	-0.256	0.011	-0.155	0.156	-0.103	0.375	-0.177	0.090	-0.300	0.012
PTSD score	-0.392	<0.001	-0.348	0.002	-0.286	0.016	-0.422	<0.001	-0.244	0.012

duo to violence (65.7%), disappearance or family member (44.8%), serious physical injury from combat (48.6%), witness killing or murder (42.9%), and other frightening or life threatening situation (63.8%). A significantly higher number of war veterans with PTSD reported that they had no access to medical care (43/61 vs 14/44) ( $\chi^2=15.41$ ,  $p<0.001$ ), being used as a human shield (16/61 vs 1/44) ( $\chi^2=10.81$ ,  $p=0.001$ ), exposed to snipers (58/61 vs 36/44) ( $\chi^2=4.795$ ,  $p=0.029$ ), being forced to leave their home (33/61 vs 11/44) ( $\chi^2=8.891$ ,  $p=0.003$ ), being exposed to beatings to the body (13/61 vs 1/44) ( $\chi^2=8.018$ ,  $p=0.005$ ), torture (13/61 vs 2/44) ( $\chi^2=5.686$ ,  $p=0.015$ ), being exposed to extortion or robbery (18/61 vs 5/44) ( $\chi^2=4.929$ ,  $p=0.027$ ), the forced separation from family members (27/61 vs 5/44) ( $\chi^2=13.057$ ,  $p<0.001$ ), witnessing torture (19/61 vs 4/44) ( $\chi^2=7.270$ ,  $p=0.007$ ), and being exposed to other life threatening situation (45/61 vs 22/44) ( $\chi^2=6.254$ ,  $p=0.012$ ).

Regarding the self-perception of the functioning war veterans with PTSD showed significantly higher values compared to those without PTSD ( $2.75\pm 0.51$  vs  $1.55\pm 0.42$ ) ( $F[1, 104]=163.237$ ,  $p<0.001$ ). The PTSD total score for the entire sample ranged from 1.06 to 4 ( $2.50\pm 0.76$ ). Total score of PTSD symptoms in PTSD group of war veterans was  $3.12\pm 0.39$ , while were  $1.84\pm 0.47$  in non PTSD group. Among the veterans of the PTSD group, the most prominent were the symptoms of arousal ( $3.29\pm 0.48$ ) and symptoms of intrusion ( $3.20\pm 0.54$ ), while the symptoms of avoidance ( $2.97\pm 0.42$ ) were somewhat less pronounced.

### Frequency of sexual dysfunctions

The majority of the sample (68.6%) screened positive for probable sexual dysfunction. The higher number of veterans with PTSD compared to veterans without PTSD had erectile dysfunction (48/61 vs 13/44), intercourse dissatisfaction (56/62 vs. 33/44), orgasmic dysfunction (48/62 vs 17/44), dysfunction of sexual desire (56/61 vs. 28/44) and dysfunction of overall satisfaction (45/61 vs 16/44) (Table 2).

Related to sociodemographic factors we found that significantly higher number of war veterans with PTSD aged 35 to 45 had sexual dysfunction (38/40) as well as in the age 46 to 55 years (14/15) ( $\chi^2=12.138$ ,  $p=0.002$ ). In the total sample the majority of war veterans with

sexual dysfunction was aged 35 to 45 (47/63) and 46 to 55 (21/29) ( $\chi^2=9.882$ ,  $p=0.007$ ). Also, significantly higher number of war veterans who used some kind of medication had sexual dysfunction (56/88) ( $\chi^2=6.142$ ,  $p=0.013$ , Exact Fisher = 0.009, Phi = -0.242) as well as who had monthly incomes less than 600 BAM (60/82) ( $\chi^2=3.674$ ,  $p=0.055$ , Exact Fisher = 0.050, Phi = -0.187). There was no significant difference in the frequency of sexual dysfunction in relation to alcohol ( $\chi^2=1.089$ ,  $p=0.297$ ), tobacco ( $\chi^2=3.674$ ,  $p=0.055$ , place of residence (0.795,  $p=0.372$ ), duration of combat experience ( $\chi^2=0.318$ ,  $p=0.524$ ), education ( $\chi^2=5.506$ ,  $p=0.138$ ), and employment ( $\chi^2=2.955$ ,  $p=0.083$ ).

### Severity of Sexual Dysfunction

Severity of dysfunction were significantly different between the PTSD and non PTSD group in all domains measured by IIEF (Table 2). War veterans with PTSD were 5.6 times as likely to complain of mild to moderate erectile dysfunction as the veterans without PTSD (95%CI 1.8-17.9), 6.3 time as likely to complain of moderate intercourse dissatisfaction (95%CI 1.3-29.1), 6.8 time as likely to complain of mild to moderate orgasmic dysfunction (95%CI 1.5-31.7), 4.7 times as likely to complain mild to moderate of sexual desire dysfunction (1.7-12.8), and 7.5 times as likely to complain of mild to moderate overall dissatisfaction (95%CI 1.6-34.5). A linear regression analysis was performed to assess the predictors of the level of sexual dysfunction. We found that the score of PTSD was significant predictor for dysfunction in all five domains of sexual functions (Table 3). Compared to the cluster of symptoms of PTSD was a significant association between the score of erectile function and hyperarousal symptoms ( $\beta=-0.381$ ,  $p=0.016$ ). There was no significant association between erectile function and cluster symptom of intrusion ( $\beta=-0.116$ ,  $p=0.445$ ) and avoidance ( $\beta=-0.106$ ,  $p=0.513$ ).

### DISCUSSION

The most veterans of the war are in age group of population that is expected to have an optimal overall mental, physical and social functionality. Duration and permanence of symptoms of PTSD impact functional ability and quality of life in people with PTSD and their

loved ones. Sexual dysfunction in patients with PTSD highlights the current sense of dysfunction, decline self-esteem, worsening partnership and family relations and lowers quality of life. Not recognizing and ignoring this problem makes more difficult ability to recover from trauma and regain quality of life in these people.

Numerous studies on sexual dysfunctions in PTSD patients revile high frequency, same as our study. Solursh and Solursh (1994), in a study of veterans of the Vietnam War, notice that 80% of patients admitted to the PTSD rehabilitation departments reported premature ejaculation and erectile dysfunction. Other studies (Letourneau et al. 1997, Cosgrove et al. 2002) found that more than 80% of veterans with PTSD have experienced clinically relevant sexual difficulties, and 69% had erectile problems. Ahmadi et al. (2006) in Iran confirm a high incidence of sexual dysfunctions in war veterans with PTSD. Their results show that 89.1% of patients had at least one sexual dysfunction, and only 10.9% did not have. Also Antičević and Britvić (2008) report common sexual dysfunction in veterans of the war in Croatia.

According to Arbanas (2005), 92.9% of subjects suffering from PTSD in Croatia have erectile problems measured by IIEF. Our study confirmed the high frequency (88.5%) of erectile dysfunction in veterans of the war with PTSD symptoms.

Previous studies, as well as our, have confirmed disturbances in matrimonial relationships in PTSD patients (Calhoun et al. 2002, Jordan et al. 1992). The reason for this may be emotional obtuseness and general decline in affective functioning, frequently found in PTSD patients. Ahmadi et al. (2006) confirm that almost half of veterans with PTSD symptoms (45.5%) are dissatisfied with their marriage and sexual relations, and in 11.1% the level of dissatisfaction was very high. Our research has also found a higher degree of dissatisfaction with partner relationship in war veterans with PTSD symptoms. Studies pointed frequent divorces and frequent physical and verbal aggressive behavior of patients with PTSD (Byrne & Riggs 1996). It is reported a high level of psychological distress, dysphoria and anxiety in the wife of veterans suffering PTSD (Beckham et al. 1996, Klarić et al. 2007, Frančičković et al. 2007). Disturbed affective functioning and matrimonial relationships could affect sexual functioning.

War veterans significantly often meet criteria for depression and alcohol abuse. Kofoed et al. (1993) suggest a higher incidence of alcohol abuse and alcohol addiction in veterans with PTSD. Depression is often associated to PTSD (Shalev et al. 1998, Babić & Sinanović 2004). These disorders were associated with sexual dysfunction, including premature ejaculation and impaired sexual desire (Fagan et al. 1988). Results of our study also confirmed higher number of veterans with PTSD symptoms that consume alcohol (67.3% of

the PTSD group versus 61.4% in the NO PTSD group), but without statistical significance. One of limitations of this study could be lack of quantification of alcohol consumption.

Another explanation for the significant levels of sexual dysfunction in patients with PTSD is based on other health (mental and physical) problems that occur in people who suffer PTSD. Soldiers, who have a large number of traumatic experience and suffering from PTSD, feel that they have poor or very poor health. The cardiovascular, gastrointestinal and musculoskeletal problems arise as factors that more affect people with PTSD than the general population (Schnurr et al. 2000). Kotler et al. (2000) in patients with PTSD find high levels of comorbid panic disorder, depression and anxiety, and they consider that could be the reason for more frequent sexual dysfunctions before PTSD itself. Participants in our study significantly often says to feel pain in body  $\chi^2=12.027$ ,  $p=0.017$ . Those could be reasons why participants in PTSD group use significantly more pain killers and anxiolytics. Similar results also report Zalihić et al. (2008). This could possibly indicate undiagnosed comorbid diseases. Also excluding the criterion for this study were taking drugs which are proven to affect sexual function. Patients in this study were taking pain killers and anxiolytics, the groups of drugs for which has not been proven to affect sexual function. There is no generally accepted attitude, although some studies suggest a possibility that benzodiazepines, particularly clonazepam may affect sexual functioning (Fossey & Hamner 1995). As previously noted in this study we found a statistically significant difference in frequency of use of these drugs between compared groups. We also found a significant positive correlation ( $p=0.024$ ) between frequency of using of these drugs and erectile dysfunction. Using partial (real) correlation between PTSD and the prevalence of erectile dysfunction we proven positive correlation ( $r=0.4864$ ,  $p<0.001$ ). This result suggests further research to determine influence of these drugs on sexual functioning.

Significantly more participants with symptoms of PTSD were unemployed (13.1% vs. 36.4%), and their incomes were lower. People with no incomes or minimal incomes, had more common sexual dysfunction. Future studies should consider influence of social status on sexual functioning. We found positive correlation between monthly incomes and sexual functioning.

Factors associated with posttraumatic stress disorder are pretraumatic, peritraumatic and posttraumatic (Ozer et al. 2003). Posttraumatic risk factors include perceived lack of social support and later life stress. One of the forms of social support is the provision of employment and favorable economic situation. Our study confirms real or at least experienced lack of social support in war veterans with PTSD symptoms. That could influence partnerships relations and disturbance partner relationship and indirectly be the reason for sexual dysfunction.

Even 86.9% of war veterans with PTSD symptoms are unemployed compared to 63.9% without PTSD, a significantly larger number of subjects in the control group was employed (16 or 36.4% compared to 8 or 13.1%) ( $p=0.005$ ). We also found a significant difference in the amount of monthly income between these two groups ( $p=0.024$ ). Most war veterans with symptoms of PTSD (78.7%) have no incomes comparing to 56.8% of the control group. This study found that the unemployed frequently have erectile dysfunction, 58 or 71.6%, in those with no incomes or minimal incomes, 54 or 73.9%, although there was no significant difference. There was a significant negative correlation between the amount of monthly income and the existence of erectile dysfunction ( $r=-0.249$ ,  $p<0.05$ ).

These results are consistent with the previously known fact that the development of PTSD may affect the so-called posttraumatic factors including the distinctive experience of the lack of social support. A large number of veterans in the sample have objective and subjective experience problems in terms of deprivation of social support, lack of employment, loss of social insurance, and loss of income sources. This condition facilitates the possibility of developing PTSD. This study confirms that this may be one reason for the appearance of symptoms of PTSD.

The limitation of this study is a relatively small number of participants, lack of quantification of alcohol consumption, differences in economic status between the respondents with PTSD and control group.

Further studies should include more participants and should control for the effect of comorbid diagnoses, amount of alcohol consumption and also for anxiolytics and other medications use, on the occurrence of sexual dysfunctions. Furthermore, predominant psychological causes of sexual dysfunctions in PTSD should be explored.

## CONCLUSION

War veterans with symptoms of posttraumatic stress disorder had significantly higher frequency of sexual dysfunction comparing to war veterans without symptoms of posttraumatic stress disorder.

War veterans with symptoms of posttraumatic stress disorder have significantly higher severity of sexual dysfunction comparing to war veterans without symptoms of posttraumatic stress disorder ( $p<0.001$ ).

There is a statistically significant correlation between the number of traumatic experiences, financial status and sexual functioning ( $p<0.001$ ).

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## Contribution of individual authors:

Elvir Bećirović: design of the study, data collection, literature searches and analyses, statistical analyses, interpretation of data, first draft, approval of the final version.

Esmina Avdibegović: design of the study, literature searches, statistical analyses, interpretation of data, approval of the final version.

Rusmir Softić: data collection, literature searches and analyses, interpretation of data, approval of the final version.

Mitra Mirković Hajdukov: data collection, statistical analyses, interpretation of data, approval of the final version.

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