PREDICTING SYMPTOM CLUSTERS OF POSTTRAUMATIC STRESS DISORDER (PTSD) IN CROATIAN WAR VETERANS: THE ROLE OF SOCIO-DEMOGRAPHICS, WAR EXPERIENCES AND SUBJECTIVE QUALITY OF LIFE

Mladen Lončar[1], Ivana Dijanić Plašć[2], Tomislav Bunjevac[3], Pero Hrabač[4], Nenad Jakšić[1], Slavica Kozina[5], Neven Henigsberg[4], Marina Šagud[1] & Darko Marčinko[1]

[1]*Department of Psychiatry, University Hospital Centre Zagreb, Zagreb, Croatia*
[2]*"Duga" Home for Child and Adult Victims of Family Violence, Zagreb, Croatia*
[3]*Department of Psychology, Faculty of Humanities and Social Sciences, University of Zagreb, Zagreb, Croatia*
[4]*Croatian Institute for Brain Research, School of Medicine, University of Zagreb, Zagreb, Croatia*
[5]*Department of Psychological Medicine, School of Medicine, University of Split, Split, Croatia*

received: 4.4.2014;   revised: 26.7.2014;   accepted: 7.8.2014

SUMMARY

Background: *Previous research has documented multiple chains of risk in the development of PTSD among war veterans. However, existing studies were mostly carried out in the West, while they also did not analyze specific symptom clusters of PTSD. The aim of this study was to examine the role of socio-demographic characteristics, war experiences and subjective quality of life in the prediction of three clusters of PTSD symptoms (i.e., avoidance, intrusion, hyperarousal).*

Subjects and methods: *This study comprised 184 male participants who have survived war imprisonment during the Croatian Homeland War in the period from 1991 to 1995. The data was collected through several self-report measuring instruments: questionnaire on socio-demographic data, war experiences (Questionnaire on Traumatic Combat and War Experiences), subjective quality of life (WHO-Five Well-being Index), and PTSD symptoms (Impact of Events Scale - Revised).*

Results: *The level of three symptom clusters of PTSD was found to be moderate to high, as indicated by the scores on the IES-R. Results of the three hierarchical regression analyses showed the following: traumatic war experiences were significant predictors of avoidance symptoms; traumatic war experiences and subjective quality of life were significant predictors of hyperarousal symptoms; and traumatic war experiences, material status and subjective quality of life were significant predictors of intrusion symptoms.*

Conclusions: *These findings support the widespread belief that the development of war-related PTSD is accounted for by multiple chains of risk, while traumatic war experiences seem to be the only predictor of all three symptom clusters. Future research should put more emphasis on specific PTSD symptom clusters when investigating the etiopathogenesis of this disorder among war-affected populations.*

Key words: *posttraumatic stress disorder – PTSD - subjective quality of life - socio-demographics - war veterans - Croatia*

* * * * *

INTRODUCTION

It is well known that psychological sequelae of war represent a significant problem in post-war communities (de Jong et al. 2003). Due to exposure to different types of traumatization, such as threat to one's own life or the life of close ones, witnessing the suffering of others, active participation in combat, captivity, or wounding, it can be assumed that a certain percentage of people will have long-term problems caused by traumatic events (Weiss et al. 2003, Davidson et al. 2004, Basoglu et al. 2005). A smaller number of persons affected by a traumatic event will not be able to integrate the traumatic experience successfully, and it will cause in them changes in biological, psychological and social aspects, chronic disturbances will occur as well as psychopathological disorders, among which the most frequent form of pathological response is posttraumatic stress disorder (PTSD) (Seal et al. 2009). In the general population, lifetime prevalence of PTSD ranges bet-ween approximately 5 and 10% (Kessler et al. 2005), while its prevalence among active duty military personnel and war veterans is significantly higher (Gates et al. 2012).

Psychiatric treatment in Croatia has been sought by more than 50,000 war participants, most often precisely for PTSD symptoms (Jukić 2000). Moreover, prevalence rate of PTSD in Balkan residents was found to be 20% (Priebe et al. 2010) and in refugees 33% (Bogic et al. 2012). The above data speak of changes in the population's mental health picture during and after the war, and of the occurrence of psychological disorders that are associated with traumatization. According to the data of the Croatian Institute of Public Health from 2004, reactions to severe stress, including PTSD, account for 7.9% of hospital-treated persons with mental disorders, while their total proportion in hospitalizations according to the number of hospitalization days is 5%. There is even a far greater number of PTSD patients in Croatian primary healthcare (Franciskovic et al. 2013).

Those were the reasons for establishing further research on PTSD in Croatia, in particular that pertaining to finding new treatments for those suffering from it. This is also in line with the principal strategies and recommendations of the World Health Organization (WHO) in the area of mental health.

Psychological problems related to the experienced war-related traumatization can appear not only immediately after the experience of a traumatic event, but also years later (Priebe et al. 2004, Karstoft et al. 2013), hence it is quite realistic to expect for consequences of war in Croatia to continue to appear for years. In order to possibly prevent the development of significantly debilitating PTSD and to rehabilitate traumatized persons in the long term, it is important to investigate personal factors and those acting from the social environment (Jakovljević et al. 2012a,b, Jakšić et al. 2012, Wright et al. 2013) that have a positive or negative impact on the recovery of traumatized persons, including war veterans. More specifically, previous studies have documented a significant role of socio-demographic characteristics (Schnurr et al. 2004, DiGangi et al. 2013), traumatic combat and war experiences (Schnurr et al. 2004, Vogt & Tanner 2007), and subjective quality of life (d'Ardenne et al. 2005, Giacco et al. 2013) in the development and maintenance of war-related PTSD. However, existing studies were mostly carried out on samples of war veterans and refugees in the West, and it is not clear whether findings can be applied to post-conflict settings. Further, systematic research on the subjective quality of life in war-affected populations is still lacking. Finally, most such studies have not examined the associations between these relevant factors and specific DSM-IV symptom clusters of PTSD (i.e., intrusion, avoidance, and hyperarousal symptoms).

For the abovementioned reasons, the aim of the current study was to investigate those aspects of an individual, of war experience and of the living environment, which can contribute to the development of specific PTSD symptoms, and is an integral part of a larger study on long-term consequences for the health and quality of life of persons who have survived imprisonment in camps during the Homeland War in Croatia.

SUBJECTS AND METHODS

Subjects

This study included 184 male participants who have survived war imprisonment in the Croatian Homeland War in the period from 1991 to 1995. The study was conducted during systematic health examinations at University Hospital "Fran Mihaljević" in Zagreb, in the period from 2008 to 2009, and is a part of a larger study on long-term consequences for the health and quality of life of Homeland War participants in Croatia. The data

was collected through several self-evaluation measuring instruments: questionnaires on socio-demographic data, participants' mental health, combat and war experiences, and participants' subjective assessment of well-being. All participants were familiarized with the content and objective of the study, and provided their informed consent. The study was approved by the ethics committee of the institution in which it was conducted.

Measures

The questionnaire for the collection of socio-demographic data was constructed for the purposes of this study, and included information on age, economic status, education, participation in the war and time spent in captivity.

The Impact of Events Scale - Revised (IES-R; Weiss & Marmar 1997) is a DSM-IV-based self-report measure of the presence of three clusters of PTSD symptoms (i.e., intrusion, avoidance, and hyperarousal symptoms) and a total subjective stress IES-R score. It consists of 22 items rated on a scale from 0 (not at all) to 5 (very much), assessing the intensity of symptoms over the past seven days. The IES-R has been used and validated in various cultures (Weiss 2007). In the present study, Cronbach's α coefficients for the subscales of intrusion, avoidance, and hyperarousal symptoms were 0.91, 0.77, and 0.88, respectively.

Questionnaire on Traumatic Combat and War Experiences (USTBI-M) (Bunjevac & Kuterovac-Jagodic 1995) was used for the self-report assessment of stressful war events and was designed specifically for the war stressors in Croatia. It consists of 40 items rated on a 3-point scale (1 – never, 2 – once, 3 – more than once). The total score on this scale represents the overall number of traumatic war experiences lived through by the subjects, with a theoretical range of 0 – 40. It has been successfully used in previous studies with Croatian war veterans (Begic & Jokic-Begic 2007). In the present study, Cronbach's α coefficient for the entire scale was 0.84.

The WHO-Five Well-being Index (WHO 2008) is a brief self-report questionnaire with 5 items reflecting the presence and absence of positive well-being related to the quality of life. The measurement of positive well-being rather than depressive symptomatology is shown to be more effective and in addition considered to be more acceptable to the patient (WHO 2008). Higher scores reflect more positive well-being. The total score is calculated by summing up all the responses and it ranges from 0 to 25. In this study, Cronbach's α coefficient was 0.91.

Statistical Analyses

Several statistical analyses were performed. The reliability of the self-report scales was assessed using

Cronbach's alpha coefficient. Descriptive analysis of socio-demographic and self-report data included means and standard deviations (mean±SD). Pearson coefficient was used for the purposes of the zero-order correlation analyses. For the prediction of the criterion variables (i.e., three clusters of PTSD symptoms as assessed by the IES-R subscales), three hierarchical regression analyses were carried out, with variables being included through three blocks in each of the three planned analyses: the first block in all three analyses was made up of socio-demographic variables (age, education level, material status), the second block of variables pertaining to the war experience as defined by time spent on the front line, length of captivity, and total number of stressful traumatic experiences, while the third block consisted of the assessment of subjective well-being. Statistical significance was set at the level of $p<0.05$. All statistical analyses were performed using the SPSS version 18 (SPSS, Chicago, IL).

RESULTS

Socio-demographic data and those related to the subjects' war experiences are shown in Table 1.

For the prediction of the criterion variables (i.e., three clusters of PTSD symptoms as assessed by the IES-R subscales), three hierarchical regression analyses were carried out, with variables being included through three blocks in each of the three planned analyses. Descriptive data for variables from all three blocks are shown in Table 2. The level of three symptom clusters of PTSD was found to be moderate to high, as indicated by the scores on the IES-R.

With regard to zero-order correlations between the predictor and the criterion variables (Table 3), the following was demonstrated: subjects with more avoidance

symptoms had more stressful traumatic experiences, while those with more intrusion and hyperarousal symptoms had more stressful traumatic experiences, poorer material status, and a lower subjective quality of life.

Table 1. Socio-demographic characteristics and combat experiences of the participants (N=184)

Characteristic	Participants No. (%)
Age	
40 and under	30 (16.3)
41 – 50	83 (45.1)
51 – 60	53 (28.8)
over 60	18 (9.8)
Education	
Primary school	20 (10.9)
Secondary school	135 (73.4)
College	21 (11.4)
University education	8 (4.3)
Material status	
Poor	13 (7.1)
Average	115 (62.5)
Good	56 (30.4)
Deployment on the front line	
No	7 (3.8)
Occasionally	19 (10.3)
Majority of service in the Croatian Army	50 (27.2)
Constantly	108 (58.7)
Length of captivity	
Up to 1 month	20 (10.9)
1 to 6 months	95 (51.6)
6 months to 1 year	69 (37.5)

Table 2. Descriptive data for the predictor and criterion variables (N=184)

	N	Minimum	Maximum	M	SD
Criterion					
IES-R Avoidance	184	0	38	21.61	8.096
IES-R Intrusion	184	1	40	24.51	9.593
IES-R Hyperarousal	184	0	30	18.09	7.896
Predictors					
Predictors in the 1st step					
Age	184	1	4	2.32	0.862
Education	184	1	4	2.09	0.625
Material status at time of the study	184	1	3	2.23	0.568
Predictors in the 2nd step					
Deployment on the front line	184	1	4	3.41	0.825
Length of captivity	184	1	3	2.27	0.655
Total number of stressful traumatic experiences	184	9	39	26.09	5.900
Predictors in the 3rd step					
Quality of life (Well-being Index)	184	0	88	44.26	19.270

Table 3. Matrix of zero-order correlations between the predictor and criterion variables (N=184)

Predictors	Criterion 1 Avoidance	Criterion 2 Intrusion	Criterion 3 Hyperarousal
Age	0.105	0.097	-0.100
Education	0.004	-0.019	0.060
Material status	-0.114	-0.234**	-0.251**
Deployment on the front line	0.002	-0.020	-0.037
Length of captivity	-0.009	-0.028	-0.006
Number of stressful traumatic experiences	0.187*	0.312**	0.276**
Quality of life (Well-being)	-0.044	-0.484**	-0.517**

** correlation is statistically significant at $p<0.01$;   * correlation is statistically significant at $p<0.05$

Results of the first hierarchical analysis in which avoidance symptoms of PTSD were used as a criterion variable are shown in Table 4. In the first step, socio-demographic variables (age, education and assessment of the current material status) explained only 2% of the variance in the criterion without a statistically significant contribution. In the second step, three variables were added pertaining to the time spent on the front line during the war, length of captivity and total number of stressful traumatic experiences. The addition of these three new predictors did not increase in a statistically significant degree the proportion of the explained variance. Out of all six predictors from the first and second block, a statistically significant individual contribution is rendered only by the total number of stressful traumatic experiences. In the third step, subjective quality of life did not increase in a statistically significant degree the proportion of the explained variance (Table 4).

Results of the second hierarchical analysis in which intrusion symptoms of PTSD were used as a criterion variable are shown in Table 5. In the first step, socio-demographic variables helped explain 5.7% of variance in the criterion. A statistically significant direct

Table 4. Prediction of the avoidance symptom cluster of PTSD – results of the hierarchical regression analysis

Predictor	R²	R²	F change	Total F	β in the first step	β in the second step	β in the last step
1st step	0.143	0.020	1.253	1.253			
Age					0.085	0.097	0.097
Education					0.023	0.014	0.014
Material status					-0.100	-0.098	-0.099
2nd step	0.240	0.057	2.313	1.797*			
Deployment on the front line						-0.040	-0.040
Length of captivity						-0.006	-0.006
Total number of stressful traumatic experiences						0.199**	0.200**
3rd step	0.240	0.057	0.005	1.533			
Quality of life (Well-being)							0.006

** association is statistically significant at $p<0.01$;   * association is statistically significant at $p<0.05$

Table 5. Prediction of the intrusion symptom cluster of PTSD – results of the hierarchical regression analysis

Predictor	R²	R²	F change	Total F	β in the first step	β in the second step	β in the last step
1st step	0.240	0.057	3.654	3.654**			
Age					0.050	0.067	0.086
Education					0.018	0.000	0.016
Material status					-0.226**	-0.220**	-0.128*
2nd step	0.411	0.169	7.899**	5.987**			
Deployment on the front line						-0.099	-0.083
Length of captivity						-0.035	-0.017
Total number of stressful traumatic experiences						0.347**	0.281**
3rd step	0.574	0.329	42.035**	12.326**			
Quality of life (Well-being)							-0.416**

** association is statistically significant at $p<0.01$;   * association is statistically significant at $p<0.05$

Table 6. Prediction of the hyperarousal symptom cluster of PTSD – results of the hierarchical regression analysis

Predictor	R^2	R^2	F change	Total F	β in the first step	β in the second step	β in the last step
1st step	0.267	0.071	4.589	4.589**	0.067	0.084	0.104
Age					-0.062	-0.078	-0.062
Education					-0.227**	-0.223**	-0.124
Material status							
2nd step	0.409	0.167	6.815**	5.924**		-0.110	-0.093
Deployment on the front line						-0.009	0.010
Length of captivity						0.320**	0.248**
Total number of stressful traumatic experiences							
3rd step	0.597	0.356	51.542**	13.891**			-0.452**
Quality of life (Well-being)					0.067	0.084	0.104

** association is statistically significant at $p<0.01$;   ***** association is statistically significant at $p<0.05$

contribution is demonstrated only in the assessment of the current material status (β=-0.226). In the second block, the predictors from the first and second step together now predict 16.9 % of the criterion variance. The current material status still has a statistically significant individual contribution (β=-0.220), while in the second step the variable of the total number of stressful traumatic experiences also has a statistically significant contribution (β=0.347). In the third step, subjective quality of life was also included, and the obtained data demonstrate a common prediction of 32.9% of criterion variance. A statistically significant individual contribution continues to be rendered by the current material status (β=-0.128) and the total number of stressful traumatic experiences (β=0.281), however, subjective quality of life is also shown to have a significant contribution (β=-0.416) (Table 5).

Results of the third hierarchical analysis in which hyperarousal symptoms of PTSD were used as a criterion variable are shown in Table 6. In the first step, socio-demographic variables helped explain 7.1% of criterion variance, and a statistically significant contribution was rendered only by the assessment of the current material status (β=-0.227). In the second block, predictors from the first and second step together now predict 16.7% of criterion variance. Out of all six predictors from the first and second block, the assessment of the current material status continues to have a statistically significant individual contribution (β=-0.223), while in the second step the total number of stressful traumatic experiences also proves to be statistically significant (β=0.320). In the third block, the predictors from all three steps together now predict 35.6% of criterion variance. The individual contribution of the current material status variable is now lost (β=-0.124), and the total number of stressful traumatic experiences continues to have a statistically significant contribution (β=0.248), while the contribution of subjective quality of life also proves to be significant (β=-0.452) (Table 6).

DISCUSSION

In this study we examined the contribution of socio-demographic variables, war experience (deployment on the front line, length of captivity, assessment of stressful traumatic experiences), and subjective quality of life (well-being) in explaining the war-related PTSD symptom clusters. These potentially relevant factors were introduced into the regression model in successive steps based on the theoretical position according to which the prediction of PTSD can be modified by socio-demographic characteristics (Schnurr et al. 2004, DiGangi et al. 2013), by personal war experience (Schnurr et al. 2004, Vogt & Tanner 2007), as well as by quality of life (d'Ardenne et al. 2005, Giacco et al. 2013), which can all together reflect on the current mental health in the form of avoidance, intrusion and hyperarousal symptoms.

The regression model on which this study relies suggests that only the total number of stressful traumatic experiences contributes to the explanation of more pronounced avoidance symptoms. In other words, subjective quality of life plays no role when it comes to avoidance symptoms. This finding is in accordance with previous claims that intrusion symptoms are subject to change over time, while avoidance symptoms are more resistant to change (Horowitz 1976, Laufer et al. 1984). Similarly, in one of the previous studies conducted on Croatian war prisoners (Loncar et al. 2011), it was shown that the direct contribution of the intrusion symptoms in the prediction of well-being becomes insignificant, while the contribution of avoidance symptoms becomes significant in a positive direction. Such findings can be corroborated by theory if avoidance symptoms are considered to be a type of defense mechanism protecting from intrusive memories and thoughts related to the traumatic past (Gabbard 2005). Indeed, Boehnlein et al. (1985) suggest that one year after intensive treatment of victims of imprison-ment significant progress was observed both in their

everyday functioning and in the changes in symptom intensity, whereas symptoms such as social isolation, shame, and avoidance remained more resistant and long-term. It should be noted, however, that one previous study found avoidance symptoms to be a significant predictor of subjective quality of life (d'Ardenne et al. 2005).

With regard to intrusion symptoms of PTSD, we have shown that lower material status, higher total number of stressful traumatic experiences and lower subjective quality of life contribute to the increase in intrusion symptoms. In another study on Croatian war prisoners (Loncar et al. 2011) where quality of life was the criterion variable, it was shown that poorer material status, higher total number of stressful traumatic experiences and intrusion symptoms serve as significant predictors. Further, research into the prevalence of PTSD and other psychiatric diseases in former war prisoners has confirmed that PTSD was diagnosed in two thirds of participants, and is associated with older age, lower income, longer captivity, re-experiencing (i.e., intrusion) of other traumatic events, and previous psychiatric treatments (Atwoli et al. 2006). A recent study conducted on American war veterans documented the protective role of having fewer psychosocial difficulties, in areas such as family and financial functioning, concerning the possible development of PTSD (Pietrzak & Southwick 2011). Based on our results, it seems that factors associated with existing life circumstances, such as poor economic conditions and subjective dissatisfaction with various areas of life, tend to exacerbate the intrusion symptoms of PTSD, possibly via increased overall experience of stress. This finding might help explain the persistence of PTSD symptoms years after the end of war in Croatia (Priebe et al. 2010) because the subjective quality of life, particularly employment and financial status, tends to be rather low in the war-affected Balkan populations (Matanov et al. 2013).

With regard to hyperarousal symptoms of PTSD, the results were shown to be very similar as for intrusion symptoms, which can stem from the assumption that the used instrument IES-R measures the same or very similar symptomatology when it comes to intrusion and hyperarousal symptoms. Namely, literature frequently speaks of two dimensions of mental state when it comes to universality and stability of symptoms occurring in victims of camp imprisonment: re-experiencing which includes intrusive thoughts, nightmares, divided attention, strong emotions and denial, or avoidance which includes lack of attention, amnesia and emotional numbness, as well as social withdrawal, lack of interest and insomnia (Horowitz 1976, Laufer et al. 1984). Data obtained in this study demonstrate that a higher total number of stressful traumatic experiences and a lower subjective quality of life contribute significantly to the explanation of hyperarousal symptoms, while the role of

material status became insignificant when controlling for the other two predictors. The surviving prisoners find it harder to adapt to normal life in the community, and with the same fear experienced in camp they face new people while at liberty, carry the same doubts and inability to get close with people, including their family (Loncar et al. 2011). Unfortunately, many life circumstances in peaceful post-war conditions can be a source of additional frustration, feelings of injustice, helplessness, and existential fear, all of which can reduce one's overall well-being, thus intensifying the arousal symptoms. It is noteworthy to mention one study (Giacco et al. 2013) showing that hyperarousal symptoms have the strongest relation with subjective quality of life, similar to our findings based on both zero-order and multivariate associations. In addition, this relationship seems to be bidirectional: a reduction in hyperarousal symptoms may result in improved well-being, and improvements in well-being may lead to reduced hyperarousal symptoms (Giacco et al. 2013).

This study has several limitations that need to be mentioned. The main limitation was its cross-sectional design, so future longitudinal research is needed to confirm the prospective causal link between investigated factors and symptom clusters of PTSD. Second, development of war-related PTSD is accounted for by multiple chains of risk, including various pre-, deployment and postdeployment mechanisms (Wright et al. 2013), many of which were not investigated in the current study. Third, we used a self-report measure of PTSD symptoms, so future studies are encouraged to conduct more valid assessment of the presence of PTSD using structured clinical interviews. Moreover, it seems this DSM-IV-based three-factor structure of PTSD symptoms might not be optimal (Stein et al. 2013). Finally, we did not control for the influence of possible psychiatric comorbidities which are quite common in case of PTSD (Davidson et al. 2004, Müller et al. 2014), and it is known that war veterans with PTSD-depression comorbidity have higher rates of morbidity, mortality and suicidal risk (Pompili et al. 2013, Ramsawh et al. 2014).

CONCLUSIONS

Based on the findings of the current research, we can conclude that the level of traumatization during the war has proven to be a significant predictor in all three clusters of PTSD symptoms, in line with a previous study where war-zone factors accounted for the largest proportion of variance in PTSD among Gulf War veterans (Vogt & Tanner 2007). In addition, subjective quality of life (well-being) emerged as a significant predictor of intrusion and hyperarousal symptoms, suggesting that treatment of war-related PTSD should include social interventions aimed at improving one's quality of life. Material status was relevant only for the

explanation of intrusion cluster. This pattern of results supports the widespread belief that the development of war-related PTSD is accounted for by multiple chains of risk, and it also seems that future research should put more emphasis on specific PTSD symptom clusters when investigating the etiopathogenesis of this disorder. Finally, having in mind the still ongoing post-war transitional period in Croatia, we hold it is warranted to study the possible predictors and moderators that can contribute to increased PTSD symptoms, for the purpose of preventing the development of other pathological conditions, and preventing potential suicidal tendencies in war-affected populations (Pompili et al. 2013).

References

1. Atwoli L, Kathuku DM, Ndetei DM: *Post traumatic stress disorder among Mau Mau concentration camp survivors in Kenya. East Afr Med Journal 2006; 83:352-9.*

2. Ayazi T, Lien L, Eide AH, Ruom MM, Hauff E: *What are the risk factors for the comorbidity of posttraumatic stress disorder and depression in a war-affected population? A cross-sectional community study in South Sudan. BMC Psychiatry 2012; 12:175.*

3. Basoglu M, Livanou M, Crnobarić C, Frančišković T, Suljić E, Đurić D, Vranešić M: *Psychiatric and cognitive effects of war in former Yugoslavia. JAMA 2005; 294:580-591.*

4. Begić D, Jokić-Begić N: *Heterogeneity of posttraumatic stress disorder symptoms in Croatian war veterans: retrospective study. Croat Med J 2007; 48:133-9.*

5. Boehnlein JK, Kinzie JD, Ben R, Fleck J: *One-year follow-up study of posttraumatic stress disorder among survivors of Cambodian concentration camps. Am J Psychiatry 1985; 142:956-9.*

6. Bogic M, Ajdukovic D, Bremner S, Franciskovic T, Galeazzi GM, et al.: *Factors associated with mental disorders in long-settled war refugees: refugees from the former Yugoslavia in Germany, Italy and the UK. Br J Psychiatry 2012; 200:216–23.*

7. Bunjevac T, Kuterovac-Jagodić G: *The questionnaire on traumatic combat and war experiences: psychometric properties and its relationship to PTSD symptoms. In Proceedings of the 12th Days of Ramiro Bujas. Department of Psychology, Naklada Slap, Jastrebarsko, 1995.*

8. d'Ardenne P, Capuzzo N, Fakhoury WK, Jankovic-Gavrilovic J, Priebe S: *Subjective quality of life and posttraumatic stress disorder. J Nerv Ment Dis 2005; 193:62–65.*

9. Davidson JR, Stein DJ, Shalev AY, Yehuda R: *Posttraumatic Stress Disorder: Acquisition, Recognition, Course, and Treatment. J Neuropsychiatry Clin Neurosci 2004; 16:135-47.*

10. de Jong JT, Komproe IH, Van Ommeren M: *Common mental disorders in postconflict settings. Lancet 2003; 361:2128-2130.*

11. DiGangi JA, Gomez D, Mendoza L, Jason LA, Keys CB, Koenen KC: *Pretrauma risk factors for posttraumatic stress disorder: A systematic review of the literature. Clin Psychol Rev 2013; 33:728-744.*

12. Franciskovic T, Sukovic Z, Tovilovic Z, Ajdukovic D, Bogic M, Kucukalic A, Lecic-Tosevski D, Morina N, Popovski M, Priebe S: *The utilization and perceived usefulness of health care and other support services by people exposed to traumatic events related to the war in the Balkans. Acta Med Acad 2013; 42:4-14.*

13. Gates MA, Holowka DW, Vasterling JJ, Keane TM, Marx BP, Rosen RC: *Posttraumatic stress disorder in veterans and military personnel: epidemiology, screening, and case recognition. Psychol Serv 2012; 9:361-82.*

14. Gabbard GO: *Psychodynamic Psychiatry in Clinical Practice (4th edition). American Psychiatric Publishing, Washington, DC, 2005.*

15. Giacco D, Matanov A, Priebe S: *Symptoms and Subjective Quality of Life in Post-Traumatic Stress Disorder: A Longitudinal Study. PLoS One 2013; 8:e60991.*

16. Horowitz MJ: *Stress Response Syndromes. Jason Aronson, New York, 1976.*

17. Jakovljević M, Brajković L, Jakšić N, Lončar M, Aukst Margetić B, Lasić D: *Posttrumatic stress disorders (PTSD) from different perspectives: A transdisciplinary integrative approach. Psychiatr Danub 2012a; 24:246-255.*

18. Jakovljević M, Brajković L, Lončar M, Čima A: *Posttraumatic stress disorders (PTSD) between fallacy and facts: What we know and what we don't know? Psychiatr Danub 2012b; 24:241-245.*

19. Jakšić N, Brajković L, Ivezić E, Topić R & Jakovljević M: *The role of personality traits in posttraumatic stress disorder (PTSD). Psychiatr Danub 2012; 24:256-266.*

20. Jukić V: *Klinička slika posttraumatskog stresnog poremećaja. In Gregurek R, Klein E (eds): Posttraumatski stresni poremećaj - hrvatska iskustva, 21-24. Medicinska naklada, 2000.*

21. Karstoft KI, Armour C, Elklit A, Solomon Z: *Long-term trajectories of posttraumatic stress disorder in veterans: the role of social resources. J Clin Psychiatry 2013; 74:e1163-8.*

22. Kessler RC, Chiu WT, Demler O, Merikangas KR, Walters EE: *Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication. Arch Gen Psychiatry 2005; 62:617-27.*

23. Laufer RS, Brett E, Gallops MS: *Post-traumatic stress disorder (PTSD) reconsidered; PTSD among Vietnam veterans. In Van der Kolk BA (Ed): Posttraumatic Stress Disorder: Psychological and Biological Sequelae. American Psychiatric Press, 1984.*

24. Loncar M, Dijanic Plasc I, Bunjevac T, Henigsberg N, Hrabac P, Groznica I, Marcinko V, Jevtovic S: *Self-Assessment of Well-Being as an Indicator of Quality of Life of Former War Prisoners – A Croatian Study. Coll Antropol 2011; 35(Suppl 1):199-204.*

25. Matanov A, Giacco D, Bogic M, Ajdukovic D, Franciskovic T, Galeazzi GM, Kucukalic A, Lecic-Tosevski D, Morina N, Popovski M, Schützwohl M, Priebe S: *Subjective quality of life in war affected populations. BMC Public Health 2013; 13:624.*

26. *Müller M, Vandeleur C, Rodgers S, Rossler W, Castelao E, Preisig M, Ajdacic-Gross V: Factors associated with comorbidity patterns in full and partial PTSD: findings from the PsyCoLaus study. Compr Psychiatry 2014; 55:837-48.*

27. *Pietrzak RH, Southwick SM: Psychological resilience in OEF-OIF Veterans: application of a novel classification approach and examination of demographic and psychosocial correlates. J Affect Disord 2011; 133:560-8.*

28. *Pompili M, Sher L, Serafini G, Forte A, Innamorati M, Dominici G, Lester D, Amore M, Girardi P: Posttraumatic Stress Disorder and Suicide Risk Among Veterans: A Literature Review. J Nerv Ment Dis 2013; 201:802-812.*

29. *Priebe S, Janković Gavrilović J, Schutzwohl M, Galeazzi GM, Lečić-Toševski D, Ajduković D, Frančišković T, Kučukalić A, Popovski M: Study of long term clinical and social outcomes after war experiences in ex Yugoslavia-methods of the "Connect project". Psychology Today 2004; 36:111-122.*

30. *Priebe S, Bogic M, Ajdukovic D, Franciskovic T, Galeazzi GM, et al.: Mental disorders following war in the Balkans: a study in 5 countries. Arch Gen Psychiatry 2010; 67:518–28.*

31. *Ramsawh HJ, Fullerton CS, Mash HB, Ng TH, Kessler RC, Stein MB, Ursano RJ: Risk for suicidal behaviors associated with PTSD, depression, and their comorbidity in the U.S. Army. J Affect Disord 2014; 161:116-22.*

32. *Schnurr PP, Lunney CA, Sengupta A: Risk factors for the development versus maintenance of posttraumatic stress disorder. J Trauma Stress 2004; 17:85–95.*

33. *Seal KH, Metzler TJ, Gima KS, Bertenthal D, Maguen S, Marmar CR: Trends and risk factors for mental health diagnoses among Iraq and Afghanistan veterans using Department of Veterans Affairs health care, 2002-2008. Am J Public Health 2009; 99:1651–8.*

34. *Stein DJ, Rothbaum BO, Baldwin DS, Szumski A, Pedersen R, Davidson JR: A factor analysis of post-traumatic stress disorder symptoms using data pooled from two venlafaxine extended-release clinical trials. Brain Behav 2013; 3:738-46.*

35. *Vogt DS & Tanner LR: Risk and resilience factors for posttraumatic stress symptomatology in Gulf War I veterans. J Trauma Stress 2007; 20:27–38.*

36. *Weiss DS & Marmar CR: The Impact of Event Scale - Revised. In Wilson JP & Keane TM (eds): Assessing psychological trauma and PTSD: a practitioner's handbook, 399-411. Guilford Press, 1997.*

37. *Weiss MG, Saraceno B, Shekhar S, Ommeren M: Mental health in the aftermath of disasters: Consensus and controversy. J Nerv Ment Dis 2003; 191:611-615.*

38. *World Health Organization, Regional Office for Europe: Well-being measures in primary health care: The DepCare Project. WHO, Stockholm, 2008.*

39. *Wright BK, Kelsall HL, Sim MR, Clarke DM, Creamer MC: Support mechanisms and vulnerabilities in relation to PTSD in veterans of the Gulf War, Iraq War, and Afghanistan deployments: a systematic review. J Trauma Stress 2013; 26:310-8.*

Correspondence:

Mladen Lončar, MD, PhD
Department of Psychiatry, University Hospital Centre Zagreb
Kišpatićeva 12, 10000 Zagreb, Croatia
E-mail: mladen.loncar1@zg.t-com.hr