

THE ROLE OF PTSD IN PERCEPTION OF HEALTH-RELATED QUALITY OF LIFE AND SOCIAL SUPPORT AMONG CROATIAN WAR VETERANS

Marijana Braš^{1,2}, Lovorka Brajković³, Veljko Đorđević², Neda Pjevač⁴ & Bernarda Braš⁵

¹Department of Psychiatry and Psychological Medicine, University Hospital Centre Zagreb, Zagreb, Croatia

²Center for Palliative Medicine, Medical Ethics and Communication Skills, University of Zagreb School of Medicine, Zagreb, Croatia

³University Department of Croatian Studies, University of Zagreb, Zagreb, Croatia

⁴Department of Educational Technology, School of Public Health „Andrija Štampar“, University of Zagreb School of Medicine Zagreb, Zagreb, Croatia

⁵Department of Social Work, Faculty of Law, University of Zagreb (student), Zagreb, Croatia

received: 4.9.2019;

revised: 17.10.2019;

accepted: 11.11.2019

SUMMARY

Background: Different studies clearly show that posttraumatic stress disorder (PTSD) is important factor in a reduction of the overall quality of life. PTSD remains a substantial problem in Croatia, nearly three decades after the beginning of the Croatian Homeland war. In this paper, we present results of our original research about impact of PTSD on the self-perceived health-related quality of life and social support in Croatian Homeland war veterans.

Subjects and methods: A total of 277 war veterans were included from all Croatian counties. 158 (57.03%) veterans has PTSD and 119 (42.47%) are without PTSD. Structured questionnaire was designed for socio-demographic data and information about combat experience and health problems. SF-36 was used in the estimation of health-related quality of life and Multidimensional Scale for Perceived Social Support for estimation of social support. Research was performed from June 2017 till November 2017.

Results: Main results of the study suggest that Croatian veterans with PTSD have lower health-related quality of life in almost all domains, and that they perceive less social support from family, friends and significant others in comparison to veterans without PTSD.

Conclusion: The results of this study reiterate strong impact of PTSD on quality of life and perception of social support. The research speaks in favor of the need to develop person-centered interdisciplinary health-care programs for this population, with special emphasis on their overall quality of life.

Key words: PTSD – QoL – HRQoL - social support - person-centered medicine

* * * * *

INTRODUCTION

The risk of exposure to trauma has been a part of the whole human history, but the classification of post-traumatic stress disorder (PTSD) is relatively new. PTSD has been known by many names in the past, such as “shell shock” during the years of World War I and “combat fatigue” after World War II. PTSD can occur in people of any ethnicity, culture and age. PTSD is characterized with persistent re-experiencing of the trauma through recurrent and intrusive recollections or dreams, persistent avoidance of stimuli associated with the trauma, numbing of general responsiveness and persistent symptoms of increased arousal. The net result of all these changes includes a wide range of dysfunctions and personal maladjustments, as well as a reduction of the overall quality of life (Roberts et al. 1982, Kessler et al. 1995). PTSD is unique among psychiatric diagnoses because of the great importance placed upon the traumatic stressor as the etiological agent. From an historical perspective, the significant change in PTSD concept was the stipulation that the etiological agent

was outside the individual rather than an inherent individual weakness (Trimble 1985). In 1980, the American Psychiatric Association (APA) added PTSD to the third edition of its Diagnostic and Statistical Manual of Mental Disorders (DSM-III) nosologic classification scheme (APA 1980). A very similar syndrome is classified in ICD-10 (The ICD-10 Classification of Mental and Behavioural Disorders: Clinical Descriptions and Diagnostic Guidelines) (WHO 1992). The latest revision, the DSM-5 (2013), has made a number of evidence-based revisions to PTSD diagnostic criteria, with both important conceptual and clinical implications (APA 2013). It has become apparent that PTSD is not just a fear-based anxiety disorder and PTSD in DSM-5 has expanded to include anhedonic/dysphoric presentations, which are most prominent. Such presentations are marked by negative cognitions and mood states as well as disruptive behavioral symptoms. PTSD is now classified in a new category, Trauma- and Stressor-Related Disorders, in which the onset of every disorder has been preceded by exposure to a traumatic or otherwise adverse environmental event. Clinical experience with the PTSD diag-

nosis has shown that there are individual differences regarding the capacity to cope with traumatic stress. Therefore, while most people exposed to traumatic events do not develop PTSD, others go on to develop the full syndrome. Data from the National Comorbidity Survey Replication indicates lifetime PTSD prevalence rates are 3.6% and 9.7% respectively among American men and women (Kessler et al. 2005). Neurobiological research indicates that PTSD may be associated with stable neurobiological alterations in both the central and autonomic nervous systems. Neuropharmacological and neuroendocrine abnormalities have been detected in most brain mechanisms that have evolved for coping, adaptation, and preservation of the species. Structural brain imaging suggests reduced volume of the hippocampus and anterior cingulate. Functional brain imaging suggests excessive amygdala activity and reduced activation of the prefrontal cortex and hippocampus (Shiromani et al. 2009). Longitudinal research has shown that PTSD can become a chronic psychiatric disorder and can persist for decades and sometimes for a lifetime. Patients with chronic PTSD often exhibit a longitudinal course with remissions and relapses of symptoms. There is also a delayed variant of PTSD in which individuals exposed to a traumatic event do not exhibit the full PTSD syndrome until months or years afterward. PTSD can have pervasive effects on all areas of a person's life (physical, psychological, social, occupational, spiritual etc.) and there is a need to investigate the impact of PTSD on a patient quality of life (QoL) and integrate the QoL approach into clinical practice (Katschnig H, 2006). Different studies suggest that patients with PTSD have reduced QoL including self-reported decreased well-being, poor physical health, occupational difficulties as well as difficulties in marital and family functioning (Zatzick et al. 1997, Renshaw et al. 2008, Peraica et al. 2014). PTSD has a great impact on a patient's health-related quality of life (HRQoL). QoL and health-related (HRQoL) are used interchangeably in the literature but each has its own meaning. QoL is a broader concept which covers all aspects of life. It can be defined in many ways which makes its measurement difficult. HRQoL has a focus on the effects of illness and specifically on the impact treatment may have on QoL. HRQoL is an individual's or a group's perceived physical and mental health over time. Patients' perceptions about how their illness affects them in their daily lives can differ from those of their practitioners and informal caregivers (Devinsky 1995, Addington et al. 2001). In combination with clinical indicators, HRQoL data contribute to the appreciation of the overall impact of disease on patients. Formal study of HRQoL is only about 25 years old, and has grown substantially over the last decade. The most commonly used HRQoL instruments are measures which characterise patients using multidimensions or scales. A distinction is drawn between generic and disease specific measures of HRQoL.

Generic assessments often cover measures of physical functioning, independence of living, emotional/mental wellbeing, and the effects of disease on work and social activity. They allow broad population level analyses and comparisons between patient groups, but they do not focus on the special features of particular conditions that cause concern to the sufferers (Carr et al. 2001, Koch 2000). In recent decades social support has been well known that affect adaptation and psychological wellbeing (Hsu et al. 2010). Social support refers to the experience of being valued, respected, cared about, and loved by others who are present in one's life. It may come from different sources such as family, friends, teachers, community, or any social groups to which one is affiliated (MdYasin et al. 2010). Social support can come in the form of tangible assistance provided by others or in the form of perceived social support that assesses individuals' confidence of the availability of adequate support when needed (Hengl 1997). Previous research shows that low social support is one of the predictors of psychological problems and associated with depression, anxiety, attention problems, social problems, somatic complaints, and low self-esteem (Teoh et al. 2001). It appears that the role of social support is very important because it is considered as a mechanism to buffer against life stressors and promote health and wellbeing (Steeese et al. 2006). Large literature demonstrates the protective effect of social support on mental health in older and younger veterans (Pietrzak et al. 2010). The aim of this research was to analyze the self-perceived health related quality of life and social support among war veterans from Croatian Homeland war (1991-1995), with the special emphasis on the impact of PTSD.

SUBJECTS AND METHODS

Subjects

The study included 277 male war veterans in the study from all Croatian counties, and average age was 53.5 years (range from 42 to 79 years). Average age of participants included in this study in the moment of combat was 26 years (range from 19 to 50). Authors sent an e-mails to several veterans' non-governmental organizations and precise time and place where authors will come with the questionnaires for their members. All subjects gave informed consent and their anonymity was preserved. The research was performed in the period from June 2017 till November 2017. Authors were present at all meetings, describing to the veterans the idea of research and answering to their questions.

Questionnaires

General Questionnaire

The general questionnaire consisted of various items including age, marital status, socioeconomic status, dis-

ability status, wartime experience, various psychiatric diagnoses, health problems, onset of PTSD symptoms, duration of PTSD and additional somatic disorders. A special part of the general questionnaire was designed to examine perceived institutional support, concentrating on, among others, three Likert-type items concerning satisfaction with the central, local and medical health care institutions for the specific problems and needs of the Croatian war veteran population. The response varied from 1 denoting "not at all" to 5 denoting "completely", relating to the subjects' satisfaction with the care provided by these various institutions.

Multidimensional Scale of Perceived Social Support

The multidimensional Scale of Perceived Social Support is a self-reported measure evaluating social support from the subject's close environment, such as peers and family (Zimet et al. 1988). It consists of 12 items with a scale ranging from 1 to 7. The intention is for the subject to express agreement with the statements with answers varying from 1 denoting "very strongly disagree" to 7 denoting "very strongly agree". Clara et al. verified this scale on a group of psychiatric patients with adequate psychometric properties. This scale has achieved an appropriate Cronbach alpha value in a sample of PTSD outpatients (Clara et al. 2003).

Health related Quality of Life (SF-36)

SF-36 Health Survey consists of 36 items, whose content refers to health status. The respondent has to indicate the level of health difficulties on a scale from 0 to 3 (0—not at all, 1—barely, 2—mildly, 3—strongly). The test measures bodily functions, limitations in functioning due to physical health, physical pain, social functioning, limited physical functioning due to emotional difficulties, vitality, psychological health, and overall self-rated health status. The total result is the sum of scores on individual items for individual measure of functioning. The higher the result, the better self-rated health status. The coefficient of internal consistency is $\alpha=0.80$, except for two items referring to social functioning ($\alpha=0.76$). The test-retest correlation after six months ranges between 0.60 and 0.90, except for the dimension of bodily pain, which amounts to 0.43. We used the Croatian version of SF-36 Health Survey, which was validated at »Andrija Stampar« School of Public Health, University of Zagreb, School of Medicine, Zagreb (Maslić et al. 2006).

Statistical Analysis

Data were presented as frequencies with range or mean values with standard deviation ($X\pm SD$). Significant differences were determined between arithmetic means of the observed variables (eight measures of SF 36, perceived institutional support, satisfaction with the central, local and medical health care institutions) using the Student's t test. The Kolmogorov-Smirnov good-

ness-of-fit test was used to confirm normal distribution of data ($p=0.350$). All statistical analyses were performed with the Statistical Package for Social Sciences for Windows, ver. 23.0 (SPSS Inc., Chicago, IL, USA). The level of statistical difference was set at $p<0.05$ or $p<0.01$, as indicated.

RESULTS

Total of 277 war veterans participated in the study. All of them were man. Their average age was 53.5 years (53.5 ± 3.356) (range from 42 to 79 years). Average age of participants included in this study in the moment of combat is 26 years (26 ± 2.698) (range from 19 to 50). Some socio-demographic data of veterans who participated in the study are presented in Table 1. 70 (25.4%) participants are still employed. Most of them are married (214, 77.4%), and graduated from high school (194, 71%). 239 (86.3%) participants have children. All participants included in this study actively participated in combat sector during the Homeland War in Croatia (1991-1995). Among them, 73% spend over 3 years in front line combat. 96, 4% of them were volunteers of Homeland War, so they were not mobilized. 59 (21.3%) of veterans in the study were wounded during the Homeland War. 233 of them (84.1%) were at the first line of battlefields. 152 (54.9%) participants have certified status of military disability. Most of the participants (77%) claim psychological disturbances as a result of psycho-traumatic events during active involvement in the Homeland war. 62.3% of them requested psychological help for their symptoms. PTSD dominates in clinical presentation (158 veterans, 57.03%). 39.8% of veterans have diagnosis of permanent changes of personality after PTSD. 53% of participants especially emphasize sleeping problems. Somatic difficulties presented in participants are lumbar spine difficulties (77%), cervical spine difficulties (63%), ulcer (69%), incontinence (65%), coronary diseases (55%), hypertension (43%), and 34% of participants were in treatment or currently are in therapy for different oncological diseases. Participants are claiming that they are completely satisfied with active involvement in Homeland War. They are very unsatisfied with public presentation of veterans and Homeland war, as well as with overall care of institutions for their rights. They are partially satisfied with their health care. By majority, they are not familiar with different their possibilities provided by local and national institutions and organizations. Participants estimate poor life quality, in particular those with diagnosed PTSD (Table 2). Significant differences have been found in participants with PTSD in comparison to those without PTSD in all health-related quality of life (HRQoL) variables except in the domain of emotional wellbeing. Croatian veterans with PTSD estimate their

somatic and social functioning considerably worse, with higher limitations in functioning due to physical and emotional difficulties. Also, they are experiencing pain and fatigue more prominent in comparison to those without PTSD and estimate their overall health as poor (Table 3). Significant differences have been

found between Croatian veterans with and without PTSD in perception of social support from family, friends and significant others. Croatian veterans with PTSD perceived less social support from family, friends and significant others in comparison to veterans without PTSD (Table 4).

Table 1. Socio-demographic characteristics of participants

		Frequency	Percentage
Employment status	Employed	70	25.40
	Unemployed	15	5.40
	Professional pension	36	13.00
	Disability pension	136	49.00
	Retirement pension	20	7.20
Marital status	Unmarried	24	8.70
	Married	214	77.40
	Divorced	24	8.80
	In a relationship	6	2.20
	Widowed	8	2.90
Education	Primary school	27	9.80
	Secondary school	194	71.00
	Higher educational level	31	11.20
	University	22	8.00
Children	Yes	239	86.30
	No	38	13.70
Certified status of military disability	Yes	152	54.90
	No	125	45.10
PTSD	Yes	158	57.03
	No	119	42.97
Injured	Yes	59	21.30
	No	218	78.70
Volunteer of Homeland War	Yes	267	96.40
	No	10	3.60
Front line combat	Yes	233	84.10
	No	44	15.90

Table2. Differences in observed variables between participants with and without PTSD

	PTSP	N	M	SD	t-test	p
I am pleased that I have been actively participated in the Homeland war	Yes	168	4.31	1.227	-1.196	0.233
	No	109	4.49	1.033		
Republic of Croatia is developed exactly how I believed it would be, when I was fighting for it	Yes	155	1.72	0.959	-2.231	0.027
	No	122	2.00	1.097		
I am pleased with public presentation of veterans and Homeland war	Yes	168	1.57	0.780	-3.092	0.002
	No	109	1.92	1.046		
I am familiar with all possibilities (work, social, health care) that are offered to me as a veteran	Yes	155	2.18	1.047	-1.657	0.099
	No	122	2.41	1.152		
I am content with overall care of state institutions for my condition	Yes	155	1.86	0.981	-0.295	0.364
	No	122	1.98	1.097		
I am content with overall care of local institutions (city, district) for my condition	Yes	156	1.95	1.076	-0.177	0.860
	No	121	1.97	1.045		
I am content with overall health care for my symptoms	Yes	156	2.50	1.283	1.242	0.215
	No	121	2.30	1.243		
I am pleased with my life	Yes	156	2.74	1.227	-5.689	0.000
	No	121	3.60	1.176		

P<0.05

Table 3. Comparison of health life quality measurements (SF 36) between participants with and without PTSD

SF 36	PTSP	N	M	SD	t-test	p
Physical functioning	Yes	141	45.82	21.490	-2.552	0.011
	No	96	53.49	24.413		
Role limitations due to physical health	Yes	144	28.65	26.686	-7.227	0.000
	No	101	58.17	37.267		
Role limitations due to emotional problems	Yes	149	15.66	29.141	-9.130	0.000
	No	101	55.61	40.019		
Fatigue	Yes	145	38.70	11.557	-6.161	0.000
	No	104	48.00	12.027		
Emotional well-being	Yes	143	44.96	11.135	1.184	0.237
	No	103	43.38	9.062		
Social functioning	Yes	153	37.55	20.490	-4.388	0.000
	No	104	49.74	23.725		
Pain	Yes	155	38.97	18.193	-8.635	0.000
	No	108	60.93	22.968		
General health	Yes	135	32.2593	17.61655	-7.913	0.000
	No	95	50.9916	17.76473		

P<0.05

Table 4. Comparison of loneliness evaluation and social support between participants with and without PTSD

	PTSD	N	M	SD	t-test	p
Loneliness	Yes	155	38.78	13.994	7.844	0.000
	No	106	24.41	15.308		
Social support - significant others	Yes	157	19.34	7.640	-2.655	0.008
	No	105	21.70	6.125		
Social support - family	Yes	157	20.05	6.419	-3.486	0.001
	No	105	22.72	5.539		
Social support - friends	Yes	157	16.89	6.511	-5.565	0.000
	No	105	21.21	5.602		

P<0.05

DISCUSSION

The type, intensity and duration of service, along with the transition from fulltime military to civilian life, may have a negative effect on veterans' well-being. Such negative consequences indicate the need for greater exploration of veterans' physical, mental and social wellbeing (Oster et al. 2017, Mihaljević et al. 2012). The mental health literature demonstrates high rates of PTSD in veteran populations. The literature furthermore highlights the worrying interconnection between PTSD and the increased risks for veterans of physical health problems, substance use/ misuse, suicide, homelessness and aggression/ violence. The results of our research clearly suggest that war veterans with PTSD has lower health-related quality of life than those without PTSD. Worsening of the quality of life in patients suffering from PTSD has been reported in previous studies in the comparable effect size (Clapp et al. 2008, Malik et al. 1999, Jukić et al. 2019). Even the results from the previous study on Croatian veterans indicated similar results (Braš et al. 2011a, 2001b). The results of this study confirmed such result.

Impaired quality of life in patients with PTSD was also confirmed in situations when PTSD originated from reasons other than war, showing similar effect size and pattern of changes (Brewin et al. 2000, Kapfhammer et al. 2004). The consistency of these results indicates that regardless on the mechanism that led to the PTSD diagnosis, the reduction of the quality of life was evident in these patients. The results suggesting a multi-dimensional nature of the determinants of quality of life in these patients. PTSD remains a significant problem in Croatian health care, with large number of reported cases and high overall burden for both healthcare system and society in total. The construct of HRQOL enables health agencies to address broader areas of healthy public policy around a common theme in collaboration with a wider circle of health partners (Kindig et al. 2010). HRQOL questions have become an important component of public health surveillance and are generally considered valid indicators of unmet needs and intervention outcomes. Self-assessed health status is also a more powerful predictor of mortality and morbidity than many objective measures of health. HRQOL measures make it possible to demonstrate the

impact of health on quality of life, going well beyond the old paradigm that was limited to what can be seen under a microscope (DeSalvo et al. 2006). The health-care needs of veterans are complex related to both their experiences as serving members and also the unique psychosocial issues associated with transitioning to civilian life. A number of factors associated with military service may contribute to the development of mental, physical and social health problems in veterans. The transition to civilian life itself has also been identified as potentially problematic (Hodson et al. 2016, Blackburn et al. 2016, Lončar et al. 2014, Frančišković et al. 2011). Another important service-based factor discussed in the literature relates to support. Service-based support in the form of unit cohesion and post-deployment support were discussed in two reviews (Xue et al. 2015, Wright et al. 2013). Low unit cohesion and lack of post deployment support were reported as risk factors for PTSD in these reviews. Previous study evaluate the association between self-perceived social support and chronic combat-related PTSD in Croatia and no significant correlation was found between peer and family support and PTSD. This might be the result of secondary victimization, traumatization, and enduring personality changes during the course of PTSD. The items evaluating satisfaction with health care and state institutional support were correlated with most of the PTSD symptoms indicating the possible importance of improving institutional policies toward this population (Đorđević et al. 2011). The research unambiguously speaks in favor of the need of person-centered approach in the treatment of war veterans and continuing education of all health professionals about interconnection of physical and psychological issues in their overall health, with special emphasis on the impact of PTSD.

CONCLUSIONS

These results are in line with the general pattern of expectation, where increased psychological load in an individual leads to impaired health-related quality of life. Patients who suffer from PTSD show even worse quality of life that those without PTSD. Assessment of HRQoL may be important during the planning of specific treatment and rehabilitation programs for the war veterans and their family members. Considering the fact that health of war veterans remains a significant problem in Croatia, it is necessary to develop person-centered interdisciplinary health-care programs for this population, with special emphasis on their quality of life. Therefore, it is important to recognize interconnection of the mental, physical and social health of veterans, and develop integrated approach to veterans' wellbeing.

Acknowledgements: None.

Conflict of interest : None to declare.

Contribution of individual authors:

Marijana Braš participated in the concept and design of the study, participated in the design of the questionnaire, survey of veterans and participated in the preparation of whole manuscript (especially in introduction and discussion chapter).

Lovorka Brajković participated in the design of the study and questionnaires and statistical analysis.

Veljko Đorđević participated in the design of the study and in the preparation of manuscript (especially in discussion chapter).

Neda Pjevač assessed articles for inclusion, participated in statistical analysis and in the preparation of manuscript (especially in the chapter related to results).

Bernarda Braš participated in the survey of veterans and collection of data as well as in manuscript drafting.

All authors read and approved the final manuscript.

References

1. Addington-Hall J, Kalra L: *Who should measure quality of life?* *BMJ* 2001; 322:1417–20
2. American Psychiatric Association: *Diagnostic and statistical manual of mental disorders (3rd ed.)*. Washington, DC, 1980
3. American Psychiatric Association: *Diagnostic and statistical manual of mental disorders (5th ed.)*. Washington, DC, 2013
4. Blackburn D: *Transitioning from military to civilian life: examining the final step in a military career*. *CMJ* 2016; 16:53–61
5. Braš M, Milunović V, Boban M, Brajković L, Benković V, Đorđević V et al.: *Quality of life in Croatian Homeland war (1991-1995) veterans who suffer from post-traumatic stress disorder and chronic pain*. *Health Qual Life Outcomes* 2011a; 9:56. Published online 2011 Jul 29. doi:10.1186/1477-7525-9-56
6. Bras M, Milunović V, Boban M, Mičković V, Loncar Z, Gregurek R et al. *A quality of life in chronic combat related posttraumatic stress disorder-a study on Croatian War veterans*. *Coll Antropol* 2011b; 35:681-6
7. Brewin CR, Andrews B, Valentine JD: *Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults*. *J Consult Clin Psychol* 2000; 68:748–66
8. Carr AJ, Higginson J: *Are quality of life measures patient centered?* *BMJ* 2001; 322:1357–60
9. Clapp JD, Beck JG, Palyo SA, Grant DM: *An examination of the synergy of pain and PTSD on quality of life: additive or multiplicative effects?* *Pain* 2008; 138:301–9
10. Clara IP, Cox BJ, Enns MW, Murray LT, Torgrudc LJ: *Confirmatory Factor Analysis of The Multidimensional Scale of Perceived Social Support in Clinically Distressed and Student Samples*. *J Pers Ass* 2003; 81:265-270

11. DeSalvo KB, Blosner N, Reynolds K, He J, Muntner PJ: Mortality prediction with a single general self-rated health question. A meta-analysis. *Gen Intern Med* 2006; 21:267-75
12. Devinsky O: Outcome research in neurology: incorporating health-related quality of life. *Ann Neurol* 1995; 37:141-2
13. Đorđević V, Braš M, Milunović V, Brajković L, Boban M, Bicanic I et al.: Self-perceived social support in Croatian war veterans suffering from combat-related posttraumatic stress disorder -- what should not have happened. *Acta Clin Croat* 2011; 50:177-84
14. Frančičković T, Stevanović A, Blažić D, Petrić D, Šuković Z, Tovilović Z & Moro IN: Croatian war veterans in print media in 1996 and in 2006. *Psychiatr Danub* 2011; 23:171-7
15. Hengl C: Role of perceived social support on depression in Chinese adolescents: A prospective study examining the buffering model. *J Appl Soc Psychol* 1997; 27:800-20
16. Hodson S, McFarlane A: Australian veterans – identification of mental health issues. *Aust Fam Physician* 2016; 45:98-101
17. Hsu HC, Tung HJ: What makes you good and happy? Effects of internal and external resources to adaptation and psychological well-being for the disabled elderly in Taiwan. *Aging Ment Health* 2010; 14:851-60
18. Jukić M, Filaković P, Požgaj I & Glavina T: Health-related quality of life of ex-prisoners of war affected by posttraumatic stress disorder 25 years after captivity. *Psychiatr Danub* 2019; 31:189-200
19. Kapfhammer HP, Rothenhäusler HB, Krauseneck T, Stoll C, Schelling G: Posttraumatic stress disorder and health-related quality of life in long-term survivors of acute respiratory distress syndrome. *Am J Psychiatry* 2004; 161:45-52
20. Katschnig H: Quality of life in mental disorders: challenges for research and clinical practice. *World Psychiatry* 2006; 5:139-145
21. Kessler RC, Sonnega A, Bromet E, Hughes M, Nelson CB: Posttraumatic stress disorder in the National Comorbidity Survey. *Arch Gen Psychiatry* 1995; 52:1048-1060
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; 62:617-627
23. Kindig DA, Booske BC, Remington PL: Mobilizing Action Toward Community Health (MATCH): metrics, incentives, and partnerships for population health. *Prev Chronic Dis* 2010; 7
24. Koch T: Life quality versus the "quality of life": assumptions underlying prospective quality of life instruments in health care planning. *Soc Sci Med* 2000; 51:419-27
25. Lončar M, Plašć ID, Bunjevac T, Hrabač P, Jakšić N, Kozina S, Henigsberg N, Šagud M & Marčinko D: Predicting symptom clusters of posttraumatic stress disorder (PTSD) in Croatian war veterans: the role of socio-demographics, war experiences and subjective quality of life. *Psychiatr Danub* 2014; 26:231-8
26. Malik ML, Connor KM, Sutherland SM, Smith RD, Davison RM, Davidson JR: Quality of life and posttraumatic stress disorder: a pilot study assessing changes in SF-36 scores before and after treatment in a placebo-controlled trial of fluoxetine. *J Trauma Stress* 1999; 12:387-393
27. Maslić Seršić D, Vuletić G: Psychometric Evaluation and Establishing Norms of Croatian SF-36 Health Survey: Framework for Subjective Health Research. *CMJ* 2006; 47
28. MdYasin AS, Dzulkifli MA: The relationship between social support and psychological problems among students. *Int J Bus Soc Sci* 2010; 1:110-6
29. Mihaljević S, Aukst-Margetić B, Vuksan-Ćusa B, Koić E & Milošević M: Hopelessness, suicidality and religious coping in Croatian war veterans with PTSD. *Psychiatr Danub* 2012; 24:292-7
30. Oster C, Morello A, Venning A, Redpath P, Lawn S: The health and wellbeing needs of veterans: a rapid review. *BMC Psychiatry* 2017; 17:414
31. Peraica T, Vidović A, Kovačić-Petrović Z, Kozarić-Kovačić D: Quality of life of Croatian veterans' wives and veterans with posttraumatic stress disorder. *Health Qual Life Outcomes*. 2014; 12: 136. Published online 2014 Sep 11. doi:10.1186/s12955-014-0136-x
32. Pietrzak RH, Johnson DC, Goldstein MB: Psychosocial buffers of traumatic stress, depressive symptoms, and psychosocial difficulties in veterans of Operations Enduring Freedom and Iraqi Freedom: The role of resilience, unit support, and post-deployment social support. *J Affect Disord* 2010; 120:188-192
33. Renshaw KD, Rodrigues CS, Jones DH: Psychological symptoms and marital satisfaction in spouses of Operation Iraqi Freedom veterans: relationships with spouses' perceptions of veterans' experiences and symptoms. *J Fam Psychol* 2008; 22:586-594
34. Roberts WR, Penk WE, Gearing ML, Robinowitz R, Dolan MP, Patterson ET: Interpersonal problems of Vietnam combat veterans with symptoms of posttraumatic stress disorder. *J Abnorm Psychol* 1982; 91:444-450
35. Shiromani PJ, Keane TM, LeDoux JE (Eds.): *Post-Traumatic Stress Disorder: Basic science and clinical practice*. New York: Humana Press, 2009
36. Steese S, Dollette M, Phillips W, Hossfeld E, Matthews G, Taormina G: Understanding Girls' Circle as an intervention on perceived social support, body image, self-efficacy, locus of control, and self-esteem. *Adolescence* 2006; 41:55-74
37. Teoh HJ, Rose P: Child mental health: Integrating Malaysian needs with international experiences. In: Amber H, editor. *Mental Health in Malaysia: Issues and Concerns*. Kuala Lumpur: University Malaya Press, 2001
38. Trimble MD: Post-traumatic Stress Disorder: History of a concept. In C.R. Figley (Ed.), *Trauma and its wake: The study and treatment of Post-Traumatic Stress Disorder*. New York: Brunner/Mazel. 1985. Revised from *Encyclopedia of Psychology*, R. Corsini, Ed. New York: Wiley, 1984, 1994
39. Ware JE. & Sherbourne CD: The MOS 36-item Short-Form Health Survey (SF-36): I. Conceptual framework and item selection. *Medical Care* 1992; 30:473-83
40. World Health Organization: *The ICD-10 classification of mental and behavioural disorders*. Geneva, Switzerland, 1992

41. 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; 26:310–318
42. Xue C, Ge Y, Tang B, Liu Y, Kang P, Wang M, et al.: A meta-analysis of risk factors for combat-related PTSD among military personnel and veterans. *PLoS One* 2015; 10:e0120270
43. Zatzick DF, Marmar CR, Weiss DS, Browner WS, Metzler TJ, Golding JM et al.: Post-traumatic stress disorder and functioning and quality of life outcomes in a nationally sample of male Vietnam veterans. *Am J Psychiatry* 1997; 154:1690–1695
44. Zimet GD, Dahlem NW, Zimet SG, Farley GK: The Multidimensional Scale of Perceived Social Support. *J Pers Ass* 1988; 52:30-41

Correspondence:

Professor Marijana Braš, MD, PhD
Department of Psychiatry and Psychological Medicine,
University Hospital Centre Zagreb
Kišpatićeva 12, 10 000 Zagreb, Croatia
E-mail: mbras@kbc-zagreb.hr