

doi: 10.3325/cmj.2010.51.209

## Patients with Combat-related and War-related Posttraumatic Stress Disorder 10 Years After Diagnosis

Goran Arbanas

Day Hospital for Psychotherapy,  
General Hospital Karlovac, Karlovac,  
Croatia

**Aim** To establish how many patients diagnosed with post-traumatic stress disorder (PTSD) in 1996 used psychiatric facilities and had psychiatric symptoms 10 years later, and assess their sociodemographic characteristics, comorbid disorders, and type of treatment.

**Methods** Medical records of patients diagnosed with PTSD in 1996 were reviewed in the period 2007-2009 and the patients who contacted a psychiatrist in that period (n = 85) and those who did not (n = 158) were compared.

**Results** There were 36.7% of men and 20% of women diagnosed with PTSD in 1996 who contacted a psychiatrist in the period 2007-2009. Patients who contacted a psychiatrist and those who did not did not differ in sex, age, the number of visits and hospitalizations in 1996, and employment status. The majority of patients still had PTSD and/or were enduring personality change in the period 2007-2009, and 54.8% had some comorbidity (mostly depression, alcohol-related disorders, and personality disorders). Patients were most often treated with anxiolytics and antidepressants.

**Conclusion** Ten years after the traumatic experience, one third of patients with PTSD received psychiatric help, regardless of their sex, age, and employment status. Half of them had comorbid disorders and the majority of them were treated with anxiolytics and antidepressants.

Received: March 26, 2010

Accepted: May 13, 2010

**Correspondence to:**

Goran Arbanas  
Day Hospital for Psychotherapy  
General Hospital Karlovac  
Andrije Štampara 3b  
47000 Karlovac, Croatia  
[goran.arbanas@ka.t-com.hr](mailto:goran.arbanas@ka.t-com.hr)

Posttraumatic stress disorder (PTSD) is a mental disorder that develops in 9%-25% of war veterans (1-4), mainly in the first two years after the traumatic experience (5,6), but sometimes can develop years later (7,8). A similar prevalence was also found among Croatian war veterans (5-9). In the majority of cases (80%-98%), PTSD is comorbid with other mental disorders: alcohol abuse, depression, anxiety disorders, and somatization (5,9-11).

PTSD can also develop after a war-related trauma that is not necessarily combat-related, and the lifetime prevalence of PTSD in this population is 15%-38% (12) and the prevalence of anxiety and depressive disorders is even higher (13,14).

Many patients in Croatia had symptoms of PTSD and used health facilities for treatment years after the war (5-9). In the former Yugoslavia, 84% of untreated war-related PTSD patients still had PTSD symptoms years after the war (15). Resolution of PTSD is observed in 50%-60% of cases (4,16).

Combat-related PTSD causes more functional impairment and is less responsive to treatment than PTSD related to other traumas (17-19). It is unclear whether this happens because there is indeed a difference between the two types of PTSD or some of the patients aggravate their symptoms in order to get compensation (17,18,20). Some studies show that the use of health facilities decreases after obtaining war veteran status and compensation, but others show that the patients who had obtained the status and compensation used medical facilities more often than those who had not (20-23).

The aim of this study was to establish how many patients diagnosed with PTSD in 1996 used psychiatric facilities and had psychiatric symptoms 10 years later and assess their comorbidities, sociodemographic characteristics, and type of treatment.

## PARTICIPANTS AND METHODS

### Participants

The study included 272 patients who contacted the only psychiatric facility in the Karlovac county at least twice (for outpatients) and who were diagnosed with PTSD during 1996. Only patients with a combat-trauma or war-related trauma were included in the study (war-related trauma was defined as a trauma related to the war activity in the region, eg, if a person was injured outside battlefield but due to military activity). The exclusion criterion of only

one visit was introduced for two reasons: 1) patients who contacted a psychiatrist only once could not get a definite diagnosis and no treatment could have been started in such a short time and 2) there were many displaced persons at that time and they changed their place of residence. Forty-nine patients were excluded for this reason. The start of the evaluation was 1996 because the war in Croatia finished in 1995 and combat-related PTSD usually develops in the first two years after the combat activity (7,8). PTSD was diagnosed by a psychiatrist, after a non-structured interview.

In the period 2007-2009, it was investigated whether the remaining 272 patients sought psychiatric help. Of 272 patients, 29 had no records (probably because they moved to another place or died), so they were excluded from further analysis. Significantly more women were lost to follow-up (8 women and 21 men;  $\chi^2_1 = 7.7$ ;  $P = 0.006$ ). These 29 patients did not differ by age from the rest of the patients. It is possible that more women were lost to follow-up because some of them married and changed their last names or changed the place of residence.

### Data collection

For the patients who were followed-up during the period 2007-2009 ( $n = 243$ ), medical records were reviewed and data were collected to find out whether and how many times they contacted a psychiatrist, how they were diagnosed in that period, what medication was recommended, and whether they were hospitalized for any reason.

### Statistical analysis

For categorical multinomial variables (eg, age, number of visits and number of hospitalizations), *t*-test for independent samples was used for the comparison of two groups (patients who contacted a psychiatrist and those who did not). Chi square analyses were used to examine the group differences across categorical dichotomous demographic variables (eg, sex, working status). Differences were considered significant at  $P < 0.05$ . Statistical analysis was performed with SPSS 17.0 software (SPSS Inc., Chicago, IL, USA).

## RESULTS

### Sociodemographic characteristics

In Karlovac general hospital, 272 patients were diagnosed with PTSD in 1996; 87.9% men ( $n = 239$ ) and 12.1% women ( $n = 33$ ). Men and women did not differ in the mean age

(men  $51.3 \pm 9.33$ ; women  $53.3 \pm 11.1$ ;  $t_{258} = 0.276$ ,  $P = 0.783$ ), the frequency of outpatient visits (men  $3.77 \pm 2.63$ ; women  $3.81 \pm 2.83$ ;  $t_{267} = 0.080$ ,  $P = 0.936$ ), and the number of psychiatric hospitalizations (men  $0.09 \pm 0.31$ , women  $0.06 \pm 0.25$ ;  $t_{267} = 0.525$ ,  $P = 0.600$ ) but they did differ in the number of day hospital treatments in 1996 (men  $0.25 \pm 0.47$ ; women  $0.06 \pm 0.25$ ;  $t_{267} = 2.24$ ;  $P = 0.026$ ).

It was possible to collect the data for 243 of 272 patients (218 men and 25 women) for the 2007-2009 period.

### Psychiatric service use

There were 36.7% ( $n = 80$ ) of men and 20.0% ( $n = 5$ ) of women who contacted a psychiatrist in the period 2007-2009, but the difference in their number was not significant ( $\chi^2_1 = 2.064$ ;  $P = 0.075$ ). Those who were lost to follow-up did not differ in age, the number of outpatient visits, the number of day hospital treatments, and the number of psychiatric hospitalizations in 1996 from those who were available for the study (Table 1).

There were no differences in age, the number of outpatient visits, the number of day hospital treatments, and the number of psychiatric hospitalizations in 1996 between the patients who contacted a psychiatrist in the period 2007-2009 and those who did not (Table 2). Also, they did not differ in the employment status (75.3%,  $n = 64$  of those

who contacted a psychiatrist, and 75.2%,  $n = 97$  of those who did not were retired,  $\chi^2_1 = 0.484$ ,  $P = 0.243$ ); it was not possible to establish the employment status of 29 patients who did not contact a psychiatrist (Table 2).

### Diagnoses in 2007-2009

Women were excluded from further analysis because there were only 5 of them. For 6 of 80 male patients who were psychiatrically treated in 2007-2009, it was not possible to establish the diagnosis (it was not defined in the records). Of the remaining 74 patients, 73% ( $n = 54$ ) were diagnosed with PTSD and 23% ( $n = 17$ ) as enduring personality change after a catastrophic experience. Also, 23.0% ( $n = 17$ ) of patients were diagnosed with depression, 17.6% ( $n = 13$ ) with alcohol-related disorders, 10.8% ( $n = 8$ ) with personality disorders, and 9.5% ( $n = 7$ ) with mixed anxiety-depressive disorder (Table 3).

### Prescribed medications

Patients were most often treated with anxiolytics (75.0%,  $n = 60$ ), antidepressants (67.5%,  $n = 54$ ), and antipsychotics (25.0%,  $n = 20$ ). Eight patients were not pharmacologically treated.

Out of patients diagnosed with PTSD and/or enduring personality change after a catastrophic experience ( $n = 53$ ), 81.1% ( $n = 43$ ) were treated with anxiolytics and the same number with antidepressants. Hypnotics and antipsychotics were used for 11 patients each (20.8%) and 2 patients were treated with mood stabilizers. The majority of patients were treated with sertraline, maprotiline, and alprazolam (Table 4).

**TABLE 1.** Comparison of patients diagnosed with posttraumatic stress disorder in 1996 who were available for the analysis and those who were not

Characteristic (mean $\pm$ standard deviation)	Availability		t-test	P
	yes (n = 243)	no (n = 29)		
Age	51.6 $\pm$ 9.1	51.4 $\pm$ 13.4	0.101	0.920
Number of outpatient visits	3.9 $\pm$ 2.6	2.9 $\pm$ 2.9	1.841	0.067
Number of day hospital treatments	0.2 $\pm$ 0.5	0.3 $\pm$ 0.5	0.444	0.658
Number of hospitalizations	0.1 $\pm$ 0.3	0.0 $\pm$ 0.2	1.019	0.309

**TABLE 2.** Comparison of patients diagnosed with posttraumatic stress disorder in 1996 who contacted a psychiatrist in 2007-2009 and those who did not

Characteristic (mean $\pm$ standard deviation)	Contact with psychiatrist		t-test	P
	yes (n = 80)	no (n = 218)		
Age	51.8 $\pm$ 9.2	51.5 $\pm$ 9.0	0.228	0.820
Number of outpatients visits	3.9 $\pm$ 2.7	3.9 $\pm$ 2.6	0.254	0.800
Number of day hospital treatments	0.2 $\pm$ 0.4	0.2 $\pm$ 0.5	0.000	1.000
Number of hospitalizations	0.1 $\pm$ 0.3	0.1 $\pm$ 0.3	0.480	0.632
Number of hospitalizations at other wards	0.6 $\pm$ 1.3	0.9 $\pm$ 1.5	1.531	0.127

percentage was smaller than reported in other studies (50%-60%) (11,16,25).

Those who were still in treatment and those who were not did not differ in the number of outpatient visits and the number of (day) hospital treatments in 1996. Also, these

**TABLE 3.** Comorbid diagnoses in the 2007-2009 in patients diagnosed with posttraumatic stress disorder in 1996

Diagnosis according to ICD-10*	Number of patients with posttraumatic stress disorder (n = 54) diagnosed with other diagnoses†
F06.2-F07.9 mental disorders, personality and behavioral disorders due to brain disease, damage and dysfunction	7
F10.0-F10.3 mental and behavioral disorders due to use of alcohol	13
F20.0-F29 schizophrenia, schizotypal and delusional disorders	4
F32.1-F33.2 depressive episode and recurrent depressive disorder	11
F41.0-F41.2 panic disorder, generalized anxiety disorder and mixed anxiety and depressive disorder	8
F43.0 acute stress reaction	3
F60 specific personality disorders	8
F62.0 enduring personality change after catastrophic experience	17

\*International Classification of Diseases-10 (24).

†The number of patients exceeds the total number of participants because some of the participants were diagnosed with more than one diagnosis.

**TABLE 4.** Antidepressants and anxiolytics prescribed for patients diagnosed with PTSD and/or enduring personality change after catastrophic experience in 2007-2009

Medication	No. (%) of patients
<b>Antidepressants:*</b>	43 (81.1)
maprotiline	15 (28.3)
sertraline	16 (30.2)
paroxetine	16 (30.2)
sulpiride	4 (7.5)
fluvoxamine	3 (5.7)
venlafaxine	3 (5.7)
other	7 (13.2)
<b>Anxiolytics:</b>	43 (81.1)
alprazolam	24 (45.3)
diazepam	15 (28.3)
oxazepam	2 (3.8)
clonazepam	2 (3.8)

\*Sum of percentages for antidepressants exceeds 100% because some of the patients were treated with more than one antidepressant.

two groups did not differ in the employment/retirement status. In other words, those who were retired and had no secondary gain any longer did not decrease the use of mental health services more than those who were not retired. This was in accordance with other studies that show that people who had sought for compensation and those who had not did not differ in the utilization of health services (20). Unfortunately, for majority of patients it was not possible to establish the reason for retirement, so it was possible that reasons other than PTSD and other mental health disabilities were responsible for retirement (eg, medical health disabilities, age), in which case compensation seeking could still be an issue. Nevertheless, retirement (even for other reasons except PTSD) diminishes secondary gain. Also, the use of health services (except psychiatry), was the same in those who continued psychiatric treatment and those who did not.

Among patients who were still in treatment 10 years later, 81.6% were still diagnosed with PTSD and/or personality change due to a catastrophic experience. The remaining patients were diagnosed with alcohol-related disorders (9.2%), depression (5.3%), and psychotic disorders (3.9%).

Among patients diagnosed with PTSD or enduring personality change after a traumatic experience, 54.8% had a comorbidity, most frequently depression, alcohol-related disorders, mixed anxiety-depressive disorder, and personality disorders. The presence of comorbidities was much less found than in other studies (9-11), especially alcohol-related disorders and depression, which raises a question whether our patients are healthier or our psychiatrists underdiagnose these disorders in the presence of PTSD.

The majority of patients with PTSD were still receiving medications (only 8 of them were not pharmacologically treated), and most frequently they were treated with antidepressants and (unfortunately) anxiolytics. There was a marked lack of mood stabilizers use, although guidelines show that mood stabilizers are useful in treatment of PTSD symptoms (26,27).

Maprotiline is one of the frequently used antidepressants, but the doses used (25-50 mg) show that this drug was prescribed as a hypnotic rather than an antidepressant, usually with another selective serotonin reuptake inhibitor. Most frequently used anxiolytics were alprazolam and diazepam, probably because the cost for these benzodiazepines is covered by the national health insurance system.

A high percentage of patients treated with anxiolytics and hypnotics was surprising since PTSD patients are at a higher risk of developing substance dependence (28) and these two groups of drugs can easily cause dependence (29). None of the patients received a diagnosis of anxiolytic dependence which suggests that the misuse of these drugs remained unnoticed by psychiatrists.

The major advantage of this study is that it was a prospective study following-up patients with PTSD for 10-13 years. This showed that patients with PTSD were less likely to develop chronic PTSD than found in other studies.

The major limitations of the study are the small sample size and the lack of data regarding characteristics of PTSD in 1996, such as the intensity of symptoms. Also, there is lack of data on educational and marital status of participants. Another limitation of the study is the poor reliability of the PTSD diagnosis made in 1996, because it was not confirmed by any diagnostic instrument. On the other hand, the aim of the study was to establish what happened to the patients diagnosed with PTSD after the war in Croatia, and our sample comprised patients who were diagnosed with PTSD in the usual way. So, while this is a limitation when it comes to the accuracy of the diagnosis, it is an advantage when it comes to the representation of people diagnosed with PTSD in Croatia.

In conclusion, 35% of patients diagnosed with PTSD in 1996 were still psychiatrically treated 10 years later, mainly with antidepressants and anxiolytics, and only a few were prescribed mood stabilizers. Half of them were diagnosed with other comorbid disorders.

## References

- Dohrenwend BP, Turner JB, Turse NA, Adams BG, Koenen KC, Marshall R. The psychological risks of Vietnam for U.S. veterans: a revisit with new data and methods. *Science*. 2006;313:979-82. [Medline:16917066 doi:10.1126/science.1128944](#)
- Erickson DJ, Wolfe J, King DW, King LA, Sharkansky EJ. Posttraumatic stress disorder and depression symptomatology in a sample of Gulf War veterans: a prospective analysis. *J Consult Clin Psychol*. 2001;69:41-9. [Medline:11302276 doi:10.1037/0022-006X.69.1.41](#)
- Hoge CW, Castro CA, Messer SC, McGurk D, Cotting DI, Koffman RL. Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *N Engl J Med*. 2004;351:13-22. [Medline:15229303 doi:10.1056/NEJMoa040603](#)
- Kessler RC, Sonnega A, Bromet E, Hughes M, Nelson CB. Posttraumatic stress disorder in the National Comorbidity Survey. *Arch Gen Psychiatry*. 1995;52:1048-60. [Medline:7492257](#)
- Kozaric-Kovacic D, Kocijan-Hercigonja D. Assessment of post-traumatic stress disorder and comorbidity. *Mil Med*. 2001;166:677-80. [Medline:11515315](#)
- Kozmar Z, Vukusic H. Post-traumatic stress disorder in Croatia war veterans: prevalence and psycho-social characteristics [in Croatian]. In: Dekaris D, Sabioncello A, editors. *New insight in posttraumatic stress disorder (PTSD)*. Zagreb: Croatian Academy of Science and Arts; 1999. p. 42-4.
- Fairbank JA, Ebert L, Costello EJ. Epidemiology of traumatic events and posttraumatic stress disorder. In: Nutt DJ, Davidson JR, Zohar J, editors. *Posttraumatic stress disorder, diagnosis, management and treatment*. London: Martin Dunitz Ltd.; 2000. p. 17-27.
- Beal AL. Post-traumatic stress disorder in prisoners of war and combat veterans of the Dieppe Raid: a 50-year follow-up. *Can J Psychiatry*. 1995;40:177-84. [Medline:7621386](#)
- Kozarić-Kovacic D, Bajs M, Vidosis S, Matic A, Alegic Karin A, Peraica T. Change of diagnosis of post-traumatic stress disorder related to compensation-seeking. *Croat Med J*. 2004;45:427-33. [Medline:15311415](#)
- Green BL. Psychosocial research in traumatic stress: an update. *J Trauma Stress*. 1994;7:341-62. [Medline:8087399 doi:10.1002/jts.2490070303](#)
- Marinic I, Supek F, Kovacic Z, Rukavina L, Jendricko T, Kozaric-Kovacic D. Posttraumatic stress disorder: diagnostic data analysis by data mining methodology. *Croat Med J*. 2007;48:185-97. [Medline:17436383](#)
- de Jong JT, Komproe IH, Van Ommeren M, El Masri M, Araya M, Khaled N, et al. Lifetime events and posttraumatic stress disorder in 4 postconflict settings. *JAMA*. 2001;286:555-62. [Medline:11476657 doi:10.1001/jama.286.5.555](#)
- Priebe S, Bogic M, Ajdukovic D, Franciskovic T, Galeazzi GM, Kucukalic A, et al. Mental disorders following war in the Balkans: a study in 5 countries. *Arch Gen Psychiatry*. 2010;67:518-28. [Medline:20439833 doi:10.1001/archgenpsychiatry.2010.37](#)
- Wenzel T, Rushiti F, Aghani F, Diaconu G, Maxhuni B, Zitterl W. Suicidal ideation, post-traumatic stress and suicide statistics in Kosovo. An analysis five years after the war. *Suicidal ideation in Kosovo. Torture*. 2009;19:238-47. [Medline:20065542](#)
- Priebe S, Matanov A, Jankovic Gavrilovic J, McCrone P, Ljubotina D, Knezevic G, et al. Consequences of untreated posttraumatic stress disorder following war in former Yugoslavia: morbidity, subjective quality of life, and care costs. *Croat Med J*. 2009;50:465-75. [Medline:19839070 doi:10.3325/cmj.2009.50.465](#)
- Shalev AY, Freedman S, Peri T, Brandes D, Sahar T, Orr SP, et al. Prospective study of posttraumatic stress disorder and depression following trauma. *Am J Psychiatry*. 1998;155:630-7. [Medline:9585714](#)
- Sayer NA, Spoot M, Nelson DB, Clothier B, Murdoch M.

- Changes in psychiatric status and service use associated with continued compensation seeking after claim determinations for posttraumatic stress disorder. *J Trauma Stress*. 2008;21:40-8. [Medline:18302170](#) [doi:10.1002/jts.20309](#)
- 18 Fontana A, Rosenheck R. Treatment-seeking veterans of Iraq and Afghanistan: comparison with veterans of previous wars. *J Nerv Ment Dis*. 2008;196:513-21. [Medline:18626291](#) [doi:10.1097/NMD.0b013e31817cf6e6](#)
  - 19 Fontana A, Rosenheck R. Effectiveness and cost of the inpatient treatment of posttraumatic stress disorder: comparison of three models of treatment. *Am J Psychiatry*. 1997;154:758-65. [Medline:9167502](#)
  - 20 Laffaye C, Rosen CS, Schnurr PP, Friedman MJ. Does compensation status influence treatment participation and course of recovery from post-traumatic stress disorder? *Mil Med*. 2007;172:1039-45. [Medline:17985763](#)
  - 21 Sayer NA, Spont M, Nelson DB. Disability compensation for PTSD and use of VA mental health care. *Psychiatr Serv*. 2004;55:589. [Medline:15128975](#) [doi:10.1176/appi.ps.55.5.589](#)
  - 22 Rosenheck RA, Fontana A. Delivery of services for PTSD. *PTSD Research Quarterly*. 1999;10:1-7.
  - 23 Grubaugh AL, Elhai JD, Monnier J, Frueh BC. Service utilization among compensation-seeking veterans. *Psychiatr Q*. 2004;75:333-41. [Medline:15563051](#) [doi:10.1023/B:PSAQ.0000043509.18637.3b](#)
  - 24 The ICD-10 classification of mental and behavioral disorders: Clinical descriptions and diagnostic guidelines. Geneva (Switzerland): World Health Organization; 1992.
  - 25 Ljubotina D, Pantic Z, Franciskovic T, Mladic M, Priebe S. Treatment outcomes and perception of social acknowledgment in war veterans: follow-up study. *Croat Med J*. 2007;48:157-66. [Medline:17436380](#)
  - 26 Katzman MA, Struzik L, Vivian LL, Vermani M, McBride JC. Pharmacotherapy of post-traumatic stress disorder: a family practitioners guide to management of the disease. *Expert Rev Neurother*. 2005;5:129-39. [Medline:15853483](#) [doi:10.1586/14737175.5.1.129](#)
  - 27 Kozaric-Kovacic D. Psychopharmacotherapy of posttraumatic stress disorder. *Croat Med J*. 2008;49:459-75. [Medline:18716993](#) [doi:10.3325/cmj.2008.4.459](#)
  - 28 Hermos JA, Young MM, Lawler EV, Rosenbloom D, Fiore LD. Long-term, high-dose benzodiazepine prescriptions in veteran patients with PTSD: influence of preexisting alcoholism and drug-abuse diagnoses. *J Trauma Stress*. 2007;20:909-14. [Medline:17955537](#) [doi:10.1002/jts.20254](#)
  - 29 O'Brien CP. Benzodiazepine use, abuse, and dependence. *J Clin Psychiatry*. 2005;66:28-33. [Medline:15762817](#)