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Psychological Problems in Children of War Veterans with Posttraumatic Stress Disorder in Bosnia and Herzegovina: Cross-Sectional Study

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Aim To assess psychological problems in children as reported by their veteran fathers with war-related posttraumatic stress disorder (PTSD).

Method The study group consisted of 154 veterans with war-related PTSD who were treated at the Mostar University Hospital. The control group consisted of 77 veterans without war-related PTSD who were selected from veteran associations by the snowball method. General Demographic Questionnaire, the first and fourth module of the Harvard Trauma Questionnaire–Bosnia and Herzegovina version, and the Questionnaire on Developmental, Emotional, and Behavioral Problems in Children, created specifically for the needs of this study, were used to collect data on veterans' perception of psychological problems in their children.

Results In comparison with veterans without PTSD, veterans with PTSD reported significantly more developmental (odds ratio [OR], 2.37; 95% confidence interval [CI], 1.51-3.73), behavioral (OR, 3.92; 95% CI, 1.53-10.03), and emotional problems (OR, 17.74; 95% CI, 2.40-131.10) in their children.

Conclusion Veterans with war-related PTSD more often reported developmental problems in their children. Father's PTSD may have long-term and long-lasting consequences on the child's personality.

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Posttraumatic stress disorder (PTSD) in one family member can negatively influence other family members and affect entire family dynamics (1-3). For many reasons, children in such families are especially vulnerable (4).

Many studies have established that, in comparison with children of combat veterans without PTSD, the children of combat veterans with PTSD have more frequent and more serious developmental, behavioral, and emotional problems (2,5-10). Some of them also have specific psychiatric problems (11).

Interviews with spouses and partners of combat veterans revealed that children of veterans with PTSD have more behavioral problems (5) and more frequent problems with authority, depression, anger, hyperactivity, and personal relationships (6-10) than children of veterans without PTSD. They are also more aggressive, use opiate drugs more often (6), and have learning difficulties and problems with diadic relations and emotional regulation (8). However, Harkness (8,12) did not find a significant association between the intensity of PTSD symptoms in veteran fathers and behavior of their children. On the other hand, it seems that the children of Vietnam War veterans did have behavioral problems, with veterans' PTSD being a possible indirect factor in this association (13). It is assumed that direct war experience may disrupt the later capability of veterans to function as parents, leading to difficulties in the development and behavior of their children (12,13).

With respect to the degree of individual and social traumatization caused by war trauma and post-war social situation in Bosnia and Herzegovina (BH), we assumed that war-related PTSD in veterans would have noticeable effect on the development of their children and that children of veterans with PTSD would have more psychological problems than children of veterans without PTSD.

The aim of our study was to determine developmental, behavioral, and emotional problems of children in BH as reported by their veteran fathers with combat-related PTSD.

Participants and methods

Participants

This study was part of a research project on the influence of veterans' PTSD on their family members (14). The study group consisted of veterans with war-related PTSD who were treated at the Psychiatric Department of Mostar University Hospital. They were asked to participate in the study consecutively as they arrived for examination to the hospital. Only veterans who were married or lived with a partner and had children were eligible for inclusion in the study group. Veterans who had alcohol dependence or had been treated for psychiatric disorders before the war were excluded. All veterans were informed on the purpose of the study. Those who provided a written informed consent were administered the CAGE questionnaire (15) to identify those with alcohol dependence. Veterans with a negative CAGE score (no alcohol dependence) received a battery of tests to fill out at home. At all times during the study, veterans could ask for therapeutic and medical help, if needed. Of 248 veterans treated at the Mostar University Hospital who were contacted for participation in the study, 37 met the criteria for alcohol dependence and were excluded, while 57 veterans did not provide their written informed consent. Thus, the final study group consisted of 154 veterans.

For the control group, veterans were recruited using a snowball method through veteran associations (16). In agreement with the representatives of veteran associations from Neretva-Herzegovina (veteran association of the Croatian Defense Council and veteran association of the Army of BH) and Western

Herzegovina counties, the principal investigator visited the associations to explain the purpose of the study, provide written information on the study to the veterans and ask them to participate. The contacted veterans were also asked to inform about the study other fellow combatants who were married or lived with a partner and had children. Veterans who agreed to participate in the study contacted the principal investigator or his coworkers by phone to schedule a meeting at the Psychiatric Department of Mostar University Hospital or association premises. At the meeting, the investigator again asked each veteran to inform other fellow combatants about the study and ask them to participate.

Veterans who accepted to participate in the study and provided their written informed consent were administered the Harvard Trauma Questionnaire (HTQ) (17) as a first-line screening test. Veterans who reported to have experienced a war trauma, but did not meet the criteria for PTSD, were administered the CAGE questionnaire to exclude alcohol dependence. Veterans with a negative CAGE score (no alcohol dependence) were included in the control group and received the same battery of tests according to the same principle as did the veterans in the study group. Of 96 veterans, 12 (12.5%) met the criteria for PTSD based on their HTQ score and 7 (8.3%) met the criteria for alcohol dependence. After exclusion of these 19 veterans, 77 veterans remained in the control group.

Table 1. Distribution of war veterans according to their demographic characteristics

Characteristic	No. (%) of veterans: study group (n = 154)	control group (n = 77)	χ^2	P
Education:			5.846	0.054
elementary school	14 (9.1)	1 (1.3)		
high school	105 (68.2)	53 (68.8)		
college/university education	35 (22.7)	23 (29.9)		
Employment status:			25.607	<0.001
employed	44 (28.6)	48 (62.3)		
unemployed	32 (20.8)	8 (10.4)		
occasionally employed	34 (22.1)	6 (7.8)		
retired	44 (28.6)	15 (19.5)		
Self-perceived economic status:			12.937	0.002
low	43 (27.9)	6 (7.8)		
medium	92 (59.7)	56 (72.7)		
high	19 (12.3)	15 (19.5)		
Marriage:			1.219	0.544
first	144 (93.5)	74 (96.1)		
second	8 (5.2)	3 (3.9)		
third	2 (1.3)	0 (0.0)		
Marriage duration:			5.649	0.130
up to 10 y	23 (14.9)	18 (23.4)		
10-20 y	43 (27.9)	25 (32.5)		
20-30 y	58 (37.7)	18 (23.4)		
over 30 y	30 (19.5)	16 (20.8)		
No. of children:			1.548	0.671
none	6 (3.9)	4 (5.2)		
one	18 (11.7)	13 (16.9)		
two	76 (49.4)	34 (44.2)		
three or more	54 (35.1)	26 (33.8)		
Chronic health conditions:			17.988	<0.001
yes	69 (44.8)	12 (15.6)		
no	85 (55.2)	65 (84.4)		

Instruments

General Demographic Questionnaire. General demographic data and data on social and economic status were collected using General Demographic Questionnaire, structured specifically for the purpose of this study (Table 1).

CAGE questionnaire. Alcohol abuse or dependence was determined with the CAGE questionnaire (15). The CAGE questionnaire is a screening tool for alcohol dependence and consists of four yes-or-no questions. If a middle-aged person provides a positive answer to only two of the four questions, he or she is considered a problematic consumer of alcohol or an alcoholic. In younger age groups, even a single positive answer is indicative of problems with alcohol.

HTQ-BH version. The first and fourth module of the BH version of the HTQ was used to determine the level of traumatization and presence of posttraumatic stress symptoms (17). This instrument was developed in 1998 through cooperation between the Harvard Program in Refugee Trauma, associations for mental health protection, and experts from BH and Croatia. HTQ is applied in the form of a structured interview. The first module is a list of possible traumatic events and contains 46 yes-or-no questions about traumatic events

and experiences to which the population of BH was exposed during and after the war (war period, refugee period, and postwar period). This part of the questionnaire is not scored. The fourth module contains 40 statements on psychosocial problems caused by trauma. The first 16 statements are derived from the criteria for PTSD according to the fourth edition of the Diagnostic and Statistical Manual for Mental Disorders. The statements refer to three main groups of symptoms consisting of re-experiencing traumatic events, avoidance, and psychological hyperarousal. The remaining statements refer to the respondent's perception of the influence of trauma on their ability to function in everyday life. Each statement is rated on a 4-point scale (1 – not at all, 2 – a little, 3 – a lot, and 4 – extremely). The total result is an average score on all 40 statements, whereas the PTSD score is an average score on the first 16 statements. The respondents whose total score or PTSD score was >2.5 were considered to have PTSD. Individual separate samples of HTQ-BH version had not been validated in BH before the implementation of this study, so we regarded the result of >2.5 as "positive" (17). This result is comparable with the results of patients who were clinically diagnosed with PTSD (17). HTQ was used in many studies and is particularly suitable for use in multicultural settings. The sensitivity of the questionnaire is 0.78, the specificity 0.65, and the total guessing score 0.75 (as determined in a sample of 91 Indochinese in 1995 and 1000 Cambodians in 1998) (18).

A questionnaire structured specifically for the purpose of this study was used to determine developmental, emotional, and behavioral problems in veterans' children (web-extra). It consisted of 16 yes-or-no questions. The first 8 questions referred to developmental neurotic manifestations in children (feeding difficulties, sphincter control, night fears, speech disorders, compulsive movements, difficulties in attending preschool daycare or school, relationship difficulties with peers, and learning problems). The remaining 6 questions referred to behavioral dysfunctions (truancy, leaving schooling, aggressive behavior, alcohol and drug abuse, delinquency, and gambling) and 2 questions referred to emotional manifestations (difficulties in establishing emotional ties, depressive disorders, and/or fears and anxiety).

Statistical analysis

For all measures, the distribution of results was presented as mean ± standard deviation (SD). To test the differences between the groups, we used χ^2 test, odds ratio for nominal variables, and t test for interval variables. The level of statistical significance was set at $P<0.05$. All statistical analyses were performed with Statistical Package for Social Sciences for Windows, version 11.0 (SPSS Inc., Chicago, IL, USA).

Results

Demographic characteristics

There was no significant difference in age between the study and control group of veterans (49.3 ± 9.1 vs 47.4 ± 11.2 years, respectively; $t = 1.32$; $P = 0.188$).

There was only a borderline difference between the groups in educational level, but the differences in employment status, economic status, and chronic health conditions were significant (Table 1). More veterans in the study group than in the control group had elementary education, low economic status, and chronic health conditions. They were also more often unemployed, occasionally employed, or retired. In the control group, there were more veterans who were employed, had college or university education level, and medium or good economic status. There were no significant differences between the study and control groups in the number of marriages, duration of marriage, and number of children.

Questionnaire scores

There were significant differences between the study and control groups in all variables tested with HTQ (Table 2). Veterans in the study group scored significantly higher on the total number of traumatic events, PTSD symptoms, perceived personal functionality, and total traumatic symptoms.

In comparison with control group, more veterans in the study group reported that their children had night fears, difficulties in school (truancy or leaving school), and depressive problems (Table 3).

When these problems were classified in three groups according to the child's age (Table 4), significantly more developmental and emotional problems and dysfunctional behavior were reported for children of veterans with PTSD than for children of veterans without PTSD.

Table 2. Harvard Trauma Questionnaire (HTQ) scores and differences between the veterans in the study and control groups

HTQ	HTQ score (mean ± standard deviation) study group (n = 154)	control group (n = 77)	t	*P*
Total number of traumatic events	13.33 ± 6.63	8.45 ± 5.61	5.66	<0.001
Posttraumatic stress disorder symptoms	2.61 ± 0.63	1.41 ± 0.39	15.29	<0.001
Symptoms of perceived personal functioning	2.25 ± 0.58	1.37 ± 0.31	12.49	<0.001
Total result on traumatic symptoms	2.40 ± 0.57	1.38 ± 0.33	14.50	<0.001

Discussion

Veterans with war-related PTSD in our study reported more developmental, neurotic, behavioral, and emotional problems in their children than veterans with war trauma but without PTSD. This finding shows a strong association between veterans' PTSD and their children's developmental problems, confirming the results of previous studies investigating the influence of PTSD in Vietnam, Korea, and World War II veterans on their family func-

Table 3. Distribution of developmental, behavioral, and emotional problems in children of veterans in the study and control groups

Developmental, neurotic, behavioral, and emotional problems in children	No. (%) of veterans reporting problems in their children: study group (n = 154) no	study group (n = 154) yes	control group (n = 77) no	control group (n = 77) yes	Odds ratio (95% confidence interval)	*P*
Feeding difficulties	136 (88.3)	18 (11.7)	72 (93.5)	5 (6.5)	1.91 (0.68-5.35)	0.220
Nocturnal enuresis	138 (89.6)	16 (10.4)	72 (93.5)	5 (6.5)	1.67 (0.59-4.74)	0.336
Night fears	127 (82.5)	27 (17.5)	75 (97.4)	2 (2.6)	7.97 (1.84-34.48)	0.005
Speech disorders	146 (94.8)	8 (5.2)	74 (96.1)	3 (3.9)	1.35 (0.39-5.25)	0.435
Compulsive movements	154 (100)	0 (0)	76 (98.7)	1 (1.3)	–*	–*
Starting preschool daycare or school	139 (90.3)	15 (9.7)	73 (94.8)	4 (5.2)	1.97 (0.63-6.15)	0.243
Problems in relationships with peers	145 (94.2)	9 (5.8)	76 (98.7)	1 (1.3)	4.72 (0.59-37.93)	0.144
Learning problems	139 (90.3)	15 (9.7)	74 (96.1)	3 (3.9)	2.66 (0.75-9.49)	0.131
Leaving school	141 (91.6)	13 (8.4)	77 (100)	0 (0)	–*	–*
Aggressive behavior	144 (93.5)	10 (6.5)	75 (97.4)	2 (2.6)	2.60 (0.56-12.19)	0.224
Alcohol abuse	149 (96.8)	5 (3.2)	75 (97.4)	2 (2.6)	1.26 (0.24-6.64)	0.271
Drug abuse	147 (95.5)	7 (4.5)	76 (98.7)	1 (1.3)	3.62 (0.44-29.96)	0.233
Delinquency	152 (98.7)	2 (1.3)	77 (100)	0 (0)	–*	–*
Gambling	153 (99.4)	1 (0.6)	77 (100)	0 (0)	–*	–*
Problems in establishing emotional ties	145 (94.2)	9 (5.8)	77 (100)	0 (0)	–*	–*
Depressive problems	131 (85.1)	23 (14.9)	76 (98.7)	1 (1.3)	13.34 (1.77-100.79)	0.012
Other difficulties	147 (95.5)	7 (4.5)	72 (93.5)	5 (6.5)	0.69 (0.21-2.24)	0.531

*No statistical analysis performed because of lack of data.

Table 4. Distribution of father-reported developmental, behavioral, and emotional problems in children of veterans in the study and control groups

Problems in children	No. of problems in children: study group (n = 154) no	study group (n = 154) yes	control group (n = 77) no	control group (n = 77) yes	Odds ratio (95% confidence interval)	*P*
Developmental problems	1124	108	592	24	2.37 (1.51-3.73)	<0.001
Behavioral dysfunctions	886	38	457	5	3.92 (1.53-10.03)	0.004
Emotional problems	276	32	153	1	17.74 (2.40-131.10)	0.005

tioning and developmental problems in their children (2,5-11).

Veteran's PTSD may have detrimental effects on the functioning of his family (1-4) and especially on children. Schwarz and Perry (19) reported that children may react to disturbing emotional states and behavior of their parents by developing symptomatic disorders of global functioning such as exaggerated crying, overeating, oversleeping, psychophysiological instability, hyperactivity or apathy, and delayed development. It has been established that children react more intensively to parental emotional states and behavior than to real danger (20-23). They can also develop a secondary traumatic stress (24), which is the reason why parental reactions play an important role in modeling the child's behavior and future ability to cope with stressful events (10).

In our study, veterans with PTSD were more often of lower economic status, unemployed, and chronically ill, which was an expected consequence of their illness, but also an additional source of difficulties and stress for the family. Veteran's PTSD can produce a crisis in the family (25,26), which has negative effects on the development and functioning of children. Many developmental theoreticians and researchers focus on the strength of attachment, which also influences the development and capacity of the child to cope with distress and stress. A safe relationship is an essential antithesis to trauma in many ways. John Bowlby (27) and Mary Ainsworth (28) define attachment as the child's inner representation of a safe base, where the primary caregiver is someone who represents security and a place from which the child can embark on discovering the world. A person with PTSD can definitely not provide a safe base.

PTSD symptoms are especially damaging not only to family cohesion, but also to the development of children (29-32). Symptoms of re-experiencing war trauma prevent the veteran from paying attention to family members and participating in family life. Avoidance symptoms can manifest as emotional distance and interaction difficulties. Hyperarousal may result in significant problems with trust. Because of veteran's unresolved sadness and fear of another loss, he may have difficulties in establishing and maintaining attachment, especially with children. Aggression and poor anger management can lead to rage outbursts, anger, hostile reactions, and even family violence or physical abuse of children, with family life revolving mostly around attempts to avoid provoking the veteran (33).

While Harkness and Zador (33) emphasize that the central problem of PTSD in a family is emotional unavailability of the member with PTSD, Greenwald (34) adds to the list problems the loss of control, frequent yelling at children, imposing discipline, or unreasonable and inconsistent punishments.

Because of low family cohesion and veteran's emotional unavailability, rage outbursts, difficulties in establishing or maintaining attachment, and many other dysfunctions (35-37), children start to perceive their family environment as unsafe and unpredictable, which is the reason why they manifest developmental, behavioral, and emotional problems. This implies the interpersonal nature of trauma and may explain the influence of veteran PTSD on the child's development and eventual , long-term and long-lasting consequences for the child's personality.

Our study has several limitations. First, due to a relatively small sample, our results may not be generalizable. Second, there were significant differences between two groups of veterans in demographic variables, which could have modified the influence of PTSD on psychosocial development of children. However, demographic differences between veterans with and without PTSD are an expected and frequent finding in studies on war-related

PTSD (38,39). Education, employment, and economic status are interlinked. Many studies found that veterans with PTSD were more often unemployed (38,40) or less paid for the same job than veterans without PTSD (40). Frequent non-psychiatric comorbid conditions also decrease work capacity of veterans with PTSD (38,41). A less educated veteran is predisposed to a greater exposure to traumatization, which is directly associated with a higher frequency of PTSD in this population (38). The third limitation is that we did not assess the children's problems directly but rather from the data obtained from their fathers. Further research should be more comprehensive and use objective psychometric instruments for a direct assessment of children, as it would allow for the analysis of parameters associated with children's developmental and mental difficulties and dysfunctional behavior.

In conclusion, war-related PTSD in veterans has a strong and complex influence on the development of their children. This influence is manifested differently at different ages and may result in long-term and long-lasting changes in biopsychosocial functioning and personality of the child. Our findings point to the need for further research and recognition of the influence of direct and indirect traumatization on children, as well as to the necessity of developing strategies for prevention and treatment of traumatized families.

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