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Psychological and behavioral problems in children of war veterans with Post Traumatic Stress Disorder

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ABSTRACT – Background and Objectives: Posttraumatic stress disorder (PTSD) caused by war trauma experiences affects veterans' ability to meet their parental obligations, which can lead to the appearance of psychological and behavioral problems in their children. We explored, based on the parents' assessment, whether the children of veterans with PTSD exhibit more psychological and behavioral problems and whether there are differences in relation to the age and sex of the child.

Methods: The study group consisted of 91 children from 50 veterans receiving treatment for the war-related PTSD at the Psychiatric Department of the University Clinical Hospital Mostar. The control group consisted of 98 children of 50 war veterans without PTSD who were selected from veteran associations by the snowball method. The following instruments were used in the study: General Demographic Questionnaire, Harvard Trauma Questionnaire–Bosnia and Herzegovina version and the Strengths and Difficulties Questionnaire for children.

Results: Children of veterans with PTSD have more pronounced psychological and behavioral problems ($U = 2372.5$; $P < 0.001$) compared to the children of veterans without PTSD. Male children of veterans with PTSD have more frequent behavioral problems ($\chi^2 = 7.174$; $P = 0.025$) compared to the female children, and overall, they more frequently exhibit borderline or abnormal psychological difficulties ($\chi^2 = 6.682$; $P = 0.029$). Children exhibiting abnormal levels of hyperactivity are significantly younger than children who exhibit normal or borderline levels of hyperactivity (Kruskal-Wallis = 3.982; $P = 0.046$).

Conclusions: The children of war veterans with PTSD have more psychological and behavioral problems in comparison with the children of veterans without PTSD.

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Introduction

Childhood and adolescence are particularly sensitive developmental stages of life¹, and disturbances experienced in these stages are important for later upbringing, socialization and successful functioning in adulthood. Growing up in aggressive, stressful and unpredictable family environments can have negative consequences in the future lives of those children². One such milieu is most certainly the family environment of veterans suffering from PTSD³. More specifically, a number of previous studies have found that close contacts and emotional connection with traumatized persons can become a chronic stressor, and that family members often experience symptoms of trauma and a wide range of psychological distress^{3,4}. Veterans suffering from PTSD, in addition to their personal trauma, due to the often present difficulties in controlling aggressive impulses^{5,6}, and impaired occupational and social functioning⁷, may have observable difficulties in relationships with their spouse and children^{4,8,9}. Withdrawal, isolation, inability to express emotions^{10,11}, and overprotection and overcontrol of their children¹² are only some of the difficulties veterans encounter while trying to function within the family system. In such family environments, important developmental processes of children are especially disturbed, such as the sense of attachment, separation and individualization, due to the fact that the sick parent puts the child in an atmosphere of high anxiety, depression and impulsivity⁴. According to previous research, children of veterans with PTSD, compared to those veterans without PTSD have more developmental, behavioral and emotional difficulties⁹, and are about twice as likely to develop serious mental health pro-

blems¹². These children are more aggressive, hyperactive¹³, have pronounced depression and somatization symptoms¹⁴, and more often engage in delinquent behavior and drug use¹⁵. Clinical studies have shown that family dysfunction is a significant predictor of emotional problems¹², non-suicidal self-injury¹⁶ and suicide attempts in adolescent children of veterans with PTSD¹⁷. It was also discovered that children of veterans suffering from PTSD are more likely to seek professional help and have dietary, academic and communication problems¹⁸, and some children may also develop secondary traumatic stress¹⁹.

Given the degree of individual and social traumatization caused by the war trauma and post-war social situation in Bosnia and Herzegovina, we have assumed that the war-related PTSD in veteran population would have a major impact on the incidence of psychological and behavioral problems in their children. The aim of this study is to determine whether children of veterans with PTSD compared to those of veterans without PTSD have more psychological and behavioral problems and whether there are differences in relation to age and sex of the child.

Participants and methods

Participants

The study group consisted of 91 children (from 3-16 years of age) of 50 war veterans receiving treatment at the Psychiatric Department of the University Clinical Hospital Mostar for PTSD caused by combat psychotrauma. The control group consisted of 98 children of 50 war veterans who were not diagnosed with PTSD and who reside in the Herzegovina-Neretva and West Herzegovina Counties.

Methods

The creation of both groups went through several phases. Veterans were the starting point in the creation of the sample population. The necessary criteria for the study group were previously established clinical diagnosis of PTSD. Another requirement was that the veteran had children ranging in age from 3-16 years old. Exclusion criteria were an already established presence of mental illness for which the veteran was treated prior to the war and veteran's status as a single father.

Applying the order in which they responded to participate in the study, veterans who fulfilled these criteria were informed by the principal researcher and his associates about the purpose of this study. Those veterans who have accepted to participate received "Research Notification" and "Consent to Participate." Once they have studied the "Research Notification" and signed "Consent to Participate", veterans were given a battery of tests which consisted of a self-evaluation scale regarding their children. The battery of tests veterans received from the researchers were filled out at home, with input from their spouses. During this time, the principal investigator and his associates have provided the participants with the possibility of constant direct phone contact, according to their needs.

While creating the study group, the researchers contacted 94 veterans with previously established PTSD diagnosis. Of the total number of veterans, two veterans (2.1%) had clinically diagnosed mental disease that was treated prior to the war, 22 veterans (23.4%) did not have any children ranging in age from 3-16 years, seven (7.4%) were single fathers, and 13 (13.8%) had not signed "Consent to Participate". After exclusion of these 44 (46.8%) veterans, the final sample of the study group consisted of 50 veterans and their 91 children.

Veterans in the control group were initially recruited through the veterans' organizations, and then by using the snowball method²⁰. In addition to not having been diagnosed with PTSD, other excluding criteria for this group were the existence of a mental disorder for which the veteran was treated prior to the war and the veterans's status of a single father. With prior agreement from the representatives of associations of war veterans in Herzegovina-Neretva and West Herzegovina Counties, the principal researcher made a one-day visit to the association's headquarters, contacted gathered veterans, distributed "Research Notification" and explained the purpose of the research, asking for their consent to participate. The researcher also asked the veterans to spread the word to their fellow veterans who are not single parents, and who have children between 3-16 years of age, while providing them with a copy of the previously prepared "Research Notification" and asking them to participate in the study. Veterans who have accepted to participate in the survey contacted the principal researcher or his associates by phone and, as agreed over the phone, reported to the Psychiatric Department of the University Clinical Hospital Mostar, or alternatively, the researcher would visit the veterans' association at the previously agreed upon time. Veterans who accepted to participate and signed the "Consent to Participate" have been administered Part IV of the HTQ questionnaire²¹, which contains questions about post-traumatic symptoms. If the results indicated the existence of PTSD, veterans were excluded from the study. Other respondents were included in further research, using the same battery of tests and the same steps as the study group. Based on the results of HTQ testing, 15 (23.1%) out of 65 veterans met the criteria for PTSD diagnosis, and they were eliminated from the research.

Instruments

General Demographic Questionnaire designed for the purpose of this study which included general demographic data on veterans and their children (first and last name, age, sex).

Harvard Trauma Questionnaire – Bosnia and Herzegovina Version is a measuring instrument exploring various traumatic and emotional disturbances that are thought to be directly associated with the trauma. It consists of four sections. For the purposes of this study we have used: the list of possible traumatic events (part I) and the list of issues relating to the psychosocial problems caused by the trauma (Part IV). The instruments were produced in 1998 jointly by the Harvard Program in Refugee Trauma with input from associations for protection of mental health as well as psychiatric experts from Bosnia and Herzegovina and Croatia (Harvard Trauma Manual Bosnia and Herzegovina Version, produced by the Harvard Program in Refugee Trauma)²¹. HTQ is administered in the form of an interview, and in the post-war period it was used in the series of studies of war psychotrauma in the former Yugoslavia^{9,22,23}.

Strengths and Difficulties Questionnaire (SDQ-Cro) – A short questionnaire for children between the ages of 3-16, intended to assess emotional and behavioral problems. A significant feature of the survey is that it focuses on assessing the strengths, not only difficulties in the behavior of children and youth. The questionnaire consisted of five sub-scales, where one of them referred to the strengths of the child (prosocial behavior), while the remaining four measured various degrees of problematic behavior of the child

(emotional problems, conduct problems, hyperactivity and peer relationship problems). Each of the mentioned subscales consisted of five psychological attributes. There are several versions of the questionnaire. This study used questionnaires that are usually completed by parents of children from 4- 16 years of age, while children from 3-4 years of age were subjected to an adapted questionnaire, which featured 22 identical particles, and two particles related to anti-social behavior which have been modified and adapted to that age. The range of answers to each question included three response categories (“not true”, “somewhat true”, “completely true”). Subscales were scored in such a way that the response “somewhat true” was always awarded one point, but marking “not true” and “completely true” would vary depending on the segment. For each of the five subscales, provided that all five segments were filled out, the result could range from 0-10. A higher score on the questionnaire assessing the child’s strengths indicates a more positive prosocial behaviour, while a higher score on the remaining four subscales indicated major difficulties. Subscale results can be comparatively evaluated as long as the subjects filled out at least three particles. Total difficulties score is obtained by adding up the results of all the subscales, excluding the “prosocial behavior” subscale. The result can range from 0-40 (and is considered to be volatile if it is missing results from one of the subscales). Although the results of the SDQ can often be used as a whole, it is sometimes convenient to classify the results in three categories, according to the level of symptoms, as normal, borderline and abnormal. Abnormal scores on one subscale or on the total difficulties score can be used to identify probable cases with mental problems²⁴.

Statistical methods of data processing

Statistical tests for data processing are selected depending on the type of variables. The χ^2 test was used for nominal and ordinal variables. In absence of the expected frequency, Fisher exact test and Yates correction were applied. In unsymmetrical distribution of data, the researchers utilized the Mann Whitney U test for comparison of two independent variables, and the Kruskal-Wallis test for comparison of more than two independent variables. SPSS for Windows (version 17.0, SPSS Inc., Chicago, Illinois, USA) and Microsoft Excel (11th version of the Microsoft Corporation, Redmond, WA, USA) were used for statistical analysis.

Results

Demographic characteristics and differences between veterans' children in the study group and the control group

The study group consisted of 51 (56%) boys and 40 (44%) girls, and the control group consisted of 59 (60.2%) boys and 39 (39.8%) girls. There was no statistically significant difference between children of observed groups regarding gender (χ^2 test = 0.336; $P = 0.562$). The average age of children for the study group was $M = 9.92$ $SD = 3.76$, versus control group $M = 10.79$ $SD = 3.59$, hence there was no statistically significant difference between the observed groups in terms of age (Mann Whitney U = 3872.000; $P = 0.117$) (Table 1).

Table 1
Demographic characteristics and differences between veterans' children in the study group and the control group

Demographic characteristics of the children		Study group (n = 91)	Control group (n = 98)	<i>P</i>
Gender, n (%)	male	51 (56%)	59 (60.2%)	0.562*
	female	40 (44%)	39 (39.8%)	
Age, Mean (SD)		9.92 (3.76)	10.79 (3.59)	0.117**

* χ^2 test.

** U = Mann-Whitney U test.

Differences in the frequency of psychological and behavioral problems in children of war veterans between the study and control group according to the Strengths and Difficulties Questionnaire (SDQ-Cro)

Of the total number of children, four children in the study group were 3-year-olds for

which one of the parents filled out a customized version of the Strengths and Difficulties Questionnaire (SDQ 3-4), and the SDQ questionnaire was not properly filled out on all scales for four children between 4-16 years old. The control group had three 3-year-olds. The results of those children were excluded from the results. The final number of children amounted to 83 in the study group and 95 in the control group.

Using Strengths and Difficulties (SDQ-Cro) Questionnaires for children aged 4-16 years, children of veterans in the study group, when compared to the children of veterans in the control group, showed more pronounced

emotional symptoms, conduct problems, hyperactivity, problems in peer relationships, more positive prosocial behavior, and a higher Total difficulties score (Table 2).

Table 2

Comparison of strengths and difficulties between the study group and the control group of veteran's children aged 4-16, as given by one of the parents

Subscales of SDQ-Cro 4-16	Result (C ± Q)*		U**	P
	Study group (n = 83)	Control group (n = 95)		
Emotional problems	2 ± 3	0 ± 1	2606.0	< 0.001
Conduct problems	2 ± 2	1 ± 2	2972.0	0.001
Hyperactivity	3 ± 4	2 ± 3	3198.5	0.015
Peer problems	1 ± 3	0 ± 1	2845.5	< 0.001
Prosocial behavior	9 ± 3	9 ± 2	3409.5	0.047
Total difficulties score	8 ± 8	4 ± 5	2372.5	< 0.001

* C = Median; Q = Interquartile Range.

** U = Mann-Whitney U test.

Comparison of psychological and behavioral problems regarding sex and age of veterans' children belonging to the study group

Data from Questionnaire SDQ-Cro 4-16 were classified into three categories according to the level of symptoms, and the results were compared in relation to the sex of veterans' children in the study group. The results indicated that male children had more frequent conduct problems (χ^2 test = 7.174; $P = 0.025$) than female, therefore the total difficulties score in male children was frequently more borderline and abnormal than in female children (χ^2 test = 6.682; $P = 0.029$).

While comparing the level of emotional symptoms, hyperactivity, problems in peer

relationships and prosocial behavior, there was no statistically significant difference regarding sex of the veterans' children in the study group (Table 3).

Analyzing data questionnaire SDQ-Cro 4-16 in relation to the age of the children revealed that the children with abnormal levels of hyperactivity were significantly younger than the children who had normal or borderline levels of hyperactivity (Kruskal-Wallis = 3.982; $P = 0.046$). Taking into account emotional symptoms, conduct problems and problems in relationships with peers, prosocial behavior and the total difficulties score, there was no statistically significant difference between three levels of symptom manifestation when it comes to the sex of children (Table 4).

Table 3
Comparison of psychological and behavioral problems of veterans' children in the study group according to gender

Subscales of SDQ-Cro 4-16	Gender (%) of children		χ^2 test*	P
	male	female		
Emotional problems			0.574	0.862
Normal	37 (78.7)	30 (76.9)		
Borderline	4 (8.5)	5 (12.8)		
Abnormal	6 (12.8)	4 (10.3)		
Conduct problems			7.174	0.025
Normal	30 (62.5)	34 (87.2)		
Borderline	7 (14.6)	3 (7.7)		
Abnormal	11 (22.9)	2 (5.1)		
Hyperactivity			3.446	0.195
Normal	34 (72.3)	32 (84.2)		
Borderline	4 (8.5)	0 (0)		
Abnormal	9 (19.1)	6 (15.8)		
Peer problems			0.828	0.721
Normal	34 (70,8)	30 (78,9)		
Borderline	8 (16,7)	4 (10,5)		
Abnormal	6 (12,5)	4 (10,5)		
Prosocial behavior			1.429	0.768
Normal	46 (95.8)	36 (94.7)		
Borderline	1 (2.1)	2 (5.3)		
Abnormal	1 (2.1)	0 (0)		
Total difficulties score			6.682	0.029
Normal	33 (71.7)	34 (91.9)		
Borderline	6 (13)	0 (0)		
Abnormal	7 (15,2)	3 (8.1)		

* Fisher s Exact.

Discussion

According to the assessment of one of the parents, children of veterans with PTSD have more pronounced psychological and behavioral problems when compared to children of veterans without PTSD. The findings of this study indicate the existence of interconnect-

edness between veterans' PTSD and psychological and behavioral problems in their children, and is consistent with findings of a series of previous studies^{4,9,12,25}.

Family life with veterans suffering from PTSD can especially negatively impact the development of their children^{9,12}. Exposure of children to stressful intrafamilial atmosphere

Table 4

Age comparison in the study group of veterans' children aged 4-16, including the results of the Strengths and Difficulties Questionnaire

Subscales of SDQ-Cro 4-16	Result (C ± Q)*			
	N	Age of child	Kruskal Wallis	P
Emotional problems			1.259	0.262
Normal	64	10 ± 6		
Borderline	9	11 ± 6		
Abnormal	10	12.5 ± 3.5		
Conduct problems			0.158	0.691
Normal	61	11 ± 6		
Borderline	10	9.5 ± 5.25		
Abnormal	12	10.5 ± 7.75		
Hyperactivity			3.982	0.046
Normal	65	11 ± 5.5		
Borderline	3	13 ± 0		
Abnormal	15	7 ± 4		
Peer problems			0.369	0.543
Normal	62	10.5 ± 6.25		
Borderline	12	9.5 ± 5.75		
Abnormal	9	11 ± 3.5		
Prosocial behavior			1.237	0.266
Normal	79	11 ± 6		
Borderline	3	7 ± 0		
Abnormal	1	–		
Total difficulties score			0.080	0.778
Normal	67	10 ± 6		
Borderline	6	12.5 ± 9.5		
Abnormal	10	11.5 ± 5.5		

* C = Median; Q = Interquartile Range.

can increase their vulnerability for development of psychological problems due to their loss of faith in parental relations and security provided by the family environment². Veterans' poor anger management skills, along with anger outbursts, aggression, and even domestic violence and physical abuse of children, are just some of the characteristics of this atmosphere^{26,27}. Family conflicts and vi-

olence may be linked to indifference and lack of parental warmth towards children, neglect, and unstable attachment² which is the basis for the development of children's emotional symptoms and behavioral problems^{12,28,29}.

Normal development in childhood and adolescence requires regulating of distance/closeness from the parents to enable formation of a

separate identity¹, which is difficult to achieve in the unstable family environment of PTSD veterans. The physical presence of veteran with PTSD, his psychological absence due to preoccupation with trauma, as well as difficulties in justifying his behavior, can confuse children and lead to disappointment and loss of their respect towards him¹⁰. Long-term undefined/missing role of the father in the family leads to confusion regarding boundaries and roles within the family, redistribution of function from father to mother and/or children and emotional distress in the rest of the family^{3,4}. In such situations, children may feel responsible for their father's emotional state, suffer from low self-esteem, lose spontaneity and interest in daily activities, which increases the risk for continuation of such behavioral patterns even in adulthood^{30,31}.

Recently conducted research in the region has also confirmed that children of veterans suffering from PTSD have more pronounced internalized and externalized problems²⁵. Significant predictor of those children's difficulties is a dysfunctional family situation, paternal overcontrol/overprotection and low maternal and paternal care¹².

Although most previous studies found behavioral problems in children of veterans with PTSD^{9,12,28}, the results of this study indicate that, according to the parents' estimates, children of veterans with PTSD have more positive prosocial behavior than children of veterans without PTSD. This could be explained by the fact that parents may be busy with their own suffering, and thus less likely to observe internalized problems in their children. Tense, depressed children of veterans with PTSD often exhibit controlled behavior which can lead to more pronounced prosocial behavior while their suffering and pain remain undetected by those who should provide them with protection and assistance³².

These observations emphasize the interpersonal nature of trauma and can help explain the impact that veterans suffering from PTSD have on the development of children, which ultimately may have far-reaching negative effects on the formation of their personality.

Comparison of psychological and behavioral problems in children of veterans with PTSD regarding gender and age

The findings of this research show that male children of veterans with PTSD exhibit behavioral problems more frequently than female children, and are more likely to exhibit borderline or abnormal overall difficulties. This finding can at least partly be explained by the socialization process and adoption of gender roles. According to previous research, different aspects of quality of family interactions are associated with different psychological problems in children of different sexes³³. Our finding that male children are more affected by their father's illness supports "Identification hypothesis"³⁴. Through the process of identification, a male child can start to feel and behave like the veteran with PTSD in order to get closer to him. Such a child may show many of the same symptoms as a veteran with PTSD^{35,36}. Rosenheck³⁴ emphasizes that the degree of identification depends on the quality of parent-child relationship and that children who have a closer relationship with their fathers develop the most similar and most difficult symptoms.

Although very little work has directly evaluated mechanisms of transmission, there is increasing support for genetic and epigenetic effects as well as parenting behaviors²⁸. The system of mirror neurons in the ventral premotor cortex, which is involved in the performance of activities and the observation of

behavior of others, also plays a significant role in the development of psychopathology in children of veterans suffering from PTSD, because of its role in imitating behavior³⁷.

The findings of this study also indicate that children with elevated (abnormal) levels of hyperactivity are significantly younger than children who exhibit normal or borderline levels of hyperactivity. The findings suggest that young children of veterans with PTSD are more susceptible to the emergence of distress, and the causes for this are likely due to their limited understanding of their complex intrafamilial situation, due to the fact that these children have not developed the cognitive ability which would enable them to process intrusive and disturbing experiences^{29,38}. The effects of trauma affect their experience of themselves, a sense of the world around them and their self-regulatory capabilities^{39,40}.

While interpreting the results obtained in this study we should take into account the specific methodological limitations. First of all, it is a relatively small sample, which makes it more difficult to apply the results on a broader population. Secondly, there were no self-assessment psychometric instruments that would enable the children to report their own perceived problems. Future research should be more comprehensive, including the children's self-assessment of the occurrence of psychological problems and disorders of behavior that may result from disturbed family relationships, along with the assessment of the objective observer (parent, teacher). In addition to this, there was no assessment of the extent of the trauma for the mother, as well as the impact of her trauma on the family dynamics and functionality, emergence of psychological and behavioral problems in children, and in particular, the consequences on the children when both parents have been traumatized.

Conclusion

Veterans suffering from PTSD have a significant impact on the occurrence of psychological and behavioral problems in their children. This set of data suggests the need for early identification and treatment of the traumatized families, to prevent far-reaching negative effects on growth and development of the affected children.

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