

## Psychosocial assistance project decreases posttraumatic stress disorder and depression amongst primary and secondary schools students in post-war Bosnia-Herzegovina

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**Objective.** To assess whether psychosocial support of the School Project of the Humanitarian Society (HS) “Prijateljice (Girlfriends)” had a positive effect on reducing posttraumatic consequences in Bosnia-Herzegovina primary and secondary school students, after the 1992-1995 war. **Subjects and Methods.** A stratified sample of 336 students, aged 13.5±1.6 (10 to 18) years, in primary and secondary schools, involved in psychosocial support, were compared with 72 randomly selected peers from the same schools, not involved in this project. Data were collected in December 2005 and in May 2006. The Children’s Depression Inventory and the Child Post-Traumatic Stress Reaction Index were utilized. Statistical analysis involved McNemar’s test, Students’ t-test, Chi-square test and Pearson’s correlation test. **Results.** According to DSM, the prevalence of PTSD and depression among students involved in the School Project, significantly decreased from 46.1% to 13.4% and 25.6% to 1.8%, respectively (McNemar’s test,  $P < 0.001$ ;  $P < 0.001$ , respectively). In the control group the prevalence of PTSP and depression decreased from 30.5% to 23.6% and 22.2% to 11.1%, respectively, with no significance (McNemar’s test,  $p = 0.332$ ;  $p = 0.077$ , significantly). Girls had a significantly higher prevalence of both PTSD and depression compared to the boys. Age, the number of traumatic episodes, and suicidal behavior correlated with the intensity of PTSD symptoms and depression symptoms. **Conclusions.** Psychosocial support within the School Project resulted in a significant reduction of PTSP and depression amongst the involved students compared to the controls. Schools and other institutions ought to envisage as many projects as possible to be implemented in school and out-of-school to assist young people to overcome more easily the consequences of the war in their development.

**Key words:** PTSD, Depression, School Students, Psychosocial assistance, Bosnia-Herzegovina.

## Introduction

During and in the aftermath of the 1992-1995 war in Bosnia-Herzegovina (BH), thousands of inhabitants have numerous traumatic experiences (1). By being exposed to serious trauma, many of them developed various psychological disorders, including posttraumatic stress disorder (PTSD) and depression (2-4). Among the most affected groups were soldiers from the front lines, prisoners of war, refugees and displaced persons (1, 4). Together with adults, children were also exposed to serious trauma. In other words, the entire population was exposed to traumatization in a country that was a theatre of war (1, 5-12). Consequences expressed as psychological problems among the population preventing their functioning in everyday activities are present among both adults and youth in school-age. To assist victims of the war catastrophe in BH, together with medical institutions, non-government organizations (NGOs) played an important role by systematically developing and conducting a number of projects for psychosocial assistance to the persons in need. One of them is the Humanitarian Association (HA) "Girlfriends" from Tuzla (13, 14).

The HS "Girlfriends" was registered as a local non-governmental organization in July 1996, by employees, beneficiaries and friends of the international organization "Amica e.V" Freiburg - Germany. The International Organization "Amica e.V." commenced its work in Germany upon receiving the first news about the war in the ex-Yugoslavia. Initial assistance was provided by shipping food, clothing and hygiene goods to Bosnia-Herzegovina and Croatia. In 1994, this organization established a permanent mission in the Tuzla Canton, and the HA "Girlfriends" took over and continued the activities that were already started as a local non-governmental organization in 1996 (13).

Our hypothesis was that psychosocial work with school students who survived

war trauma may have positive outcomes in reducing the posttraumatic consequences in this vulnerable population in Bosnia-Herzegovina, in the form of the psychosocial support of the School Project.

Our aim was to estimate whether the psychosocial support of the School Project HA "Girlfriends" had a positive effect on reducing the prevalence of PTSD and depression in Bosnia-Herzegovina primary and secondary school students, after the 1992-1995 war.

## Subjects and methods

### Subjects

This study involved 408 students aged  $13.5 \pm 1.7$  (10 to 18) years, who volunteered to participate in this research. The sample was divided into the two groups. The first group consisted of 336 students aged  $13.5 \pm 1.6$  (10 to 18) years, who were involved in the "Girlfriends" projects. To avoid ethical conflicts for students in the control group, they were asked and they agreed to participate in this project during the following year (13). This group consisted of 72 randomly selected students aged  $13.7 \pm 1.9$  (11 to 17) years, from the same schools and age-group with no significant age differences ( $p=0.338$ ), but who were not involved in this NGO's project. Out of 336 students involved in the School Project, 157 (46.7%) were from the Federation of Bosnia-Herzegovina (FBH) and 179 (53.3%) were from the Republika Srpska (RS) entity. There was no statistically significant difference in the number of students in terms of entity origin ( $p=0.230$ ). During the test period, members of the School Project "Girlfriends" team were present in the classroom.

This „School Project" was approved by both Ministries for Education, Culture and Sport of the Tuzla Canton and the Ministry of Education and Culture of the Republika Srpska. All the procedures and aims of the project were discussed with the head teach-

ers of the elementary and secondary schools involved in the project. Parents gave written informed consent for the children to participate in the study. All participants were informed that participation was voluntary and that they could withdraw from the study at any time.

### **School project**

In 1997, the "Girlfriends" started project implementation in schools located in the Tuzla Canton in order to assist children who had returned from abroad to follow the local curricula. This assistance involved organization of additional lessons for children who had started their education in other European countries in order to overcome the transition period of adjusting to the subjects of their national groups, mathematics, as well as the education system in the Federation of BH in general.

As the two-way (from FBH to RS and vice versa) return process of the BH population to their pre-war places of residence intensified, the project was modified in accordance with beneficiaries' needs. After successful implementation in schools and positive feedback from students, their parents, teachers and school authorities and the positive acceptance of the Ministries for Education, we upgraded the project as late as 2000. The project was given new content in order to support the idea of forming a single school system in Bosnia-Herzegovina. The school project still remains and although the team members changed from time to time, the leader of project is permanently engaged from the beginning up to the present day.

The general aim is to bring about the implementation of a single school system in Bosnia-Herzegovina. Besides the general aim, there are three specific aims:

1. Reduction of prejudice, acceptance of differences, and reduction of aggressive characteristics among children

2. Networking of children, parents, teachers and school management in both entities

3. Formation of Students' Clubs as an official part of the school.

The project: "Supporting returning students in integration into the school system in post war Bosnia and Herzegovina" had the objective of providing education on reconciliation for students, parents, teachers and school managers and support for BH educational reform.

The target groups were students, survivors of war trauma and exile aged 12-15 years, belonging to three different nationalities (Bosniaks, Serbs and Croats) in primary and secondary schools. The parents of involved students, teachers of the involved students, and the school management of the schools were involved in the project.

The project involved 450 students in ten schools, paired according to the partnership of schools in RS and FBH. Every elementary school and secondary school in FBH has a related partner in RS.

The project team included four university educated professionals (one man and three women) in the field of pedagogy, who had regular monthly supervisions with a certified supervisor.

The selection of the primary and secondary schools depended on the concentration of displaced students in certain places in FBH and RS. In FBH we chose five schools (four elementary and one secondary) with the highest number of internally displaced students, who originally belonged to places in RS but they had not returned to their home towns despite the fact that the war had ended. On the other hand we chose five schools in RS (four elementary and one secondary), with the highest number of returnees to their pre-war homes from foreign countries and from FBH.

In a situation where the return process is incomplete, relationships between students of different nationalities in both entities were

difficult, so upon the recommendation of the Organization for Security and Co-operation in Europe - Mission to Bosnia-Herzegovina (OSCE) the "School Project" team applied the project activities to these partners' schools.

The main objectives of this School Project were to give support during the transition period for students moving from one entity to another, so that they could freely continue with their schooling, not losing a school year or having to take additional exams in certain subjects that differ from one entity to another.

### **Selection of students included in the project**

As previously described Hasanović et al. (13) in every school (eight elementary and two secondary) one teacher was engaged with a coordinating role. Teachers formed student groups in their schools using the following selection criteria in both FBH and RS: a) experience of war atrocities and experience of being refugee or internally displaced person, during the war in Bosnia-Herzegovina, b) obstructions and hindrances to return to original homes despite the end of the war, and c) return to reconstructed homes after the war finished in December 1995, with their parents, in and unsafe setting. The exclusion criterion was the lack of war experiences because they left Bosnia-Herzegovina with their families before the war started, and spent the whole war period in a foreign country. Since the project activities were considered to be elective, recruitment was voluntary.

Activities in the Project were adjusted according to the ages of the students:

1. Students' free time activities, over five months, in 20 lessons (every week) were realized in all schools. The issues that were dealt with were: Emotions, Non-violent communication, Peer mediation, Cooperation and tolerance, Stereotypes and prejudices, Children's rights and Humanization of inter-gender relations.

2. Workshops with students (meetings between students from partner schools from both entities, once in one school then in the other), during the observed period twenty workshops were realized (half-day meeting of students) and during those meetings topics from the following fields were covered: Emotions, Non-violent communication and topics about educational reform in BH: "The school I would like".

3. Training for leaders (five students from all ten schools) and for school coordinators, one teacher were chosen from each school. During the observed period two training sessions (15 hours) were held about the issues that contribute to the development of the Student's school clubs: Team work, The role of Student's school clubs in the development of democratic processes in schools, The role of leaders in the Student's school club work and Running initiatives from Student's school clubs.

4. Training for school coordinators (school teachers), during the observed period: three training sessions were held (15 hours) with topics related to "The development of a humane, democratic school".

5. Work with parents:

a) Workshops for parents: in each school one workshop with students' parents was held with the aim of preventing domestic violence: „Parent-child communication“

b) Support for School boards and parents – four workshops were held in two schools (14 hours). The aim of these workshops was to involve parents and students in school management.

6. Work with school management, training sessions were held (five hours) for ten head teachers and ten pedagogues on topics from the field of school and educational reforms in BH.

All activities with students, teachers, school managers and parents were interactive creating a favourable working environment (13). This contributed to the united

school system throughout the territory of Bosnia-Herzegovina. Students initiated eco-activities in their schools, and make efforts to involve other peers. By doing so, they increased their awareness of ecology.

### Assessment instruments

We utilized a questionnaire for basic personal and socio-demographical data concerning age, sex, loss of family members, displacement from home and home country, and needs expressed by students. In addition, 20 questions about the students' experiences during the war (15) were included. Even though the students were able to read the questions without significant supervision, we were quite involved and intervened to assist them to reduce the risk of repeated stress and non-identified trauma exposure. It was explained to every pupil that if he or she did not want to answer any of the questions, they were not obliged to. The second questionnaire was the Child Post-Traumatic Stress Reaction Index (16), which measures PTSD symptoms, including forced images, weak concentration and bad dreams. The questionnaire has 16 questions and a score of 7 positive answers is crucial for diagnosing PTSD (15).

The third questionnaire was the Depression Inventory – CDI, which consisted of 27 questions that measured the existing level of depression among children in the 7-17 years age group (17). Every pupil could choose one of three possible answers to any of the questions (e.g. "I do not think about committing suicide", "I do think about committing suicide but would never do it", and "I want to commit suicide"). Responses to all questions are made in a 0-2 scale according to the following principle: 0 – lack of symptom; 1 – weak symptom; and 2 – strong symptom. Informants were asked to evaluate their feelings in the last two weeks, by using the statements offered. The prevalence of

depressive symptoms and depression among students was determined on the basis of the CDI cut-off T-score 55.5 (18).

Two testing periods were conducted. The first took place at the beginning of December 2005, whereas the control testing took place at the end of May 2006. Testing on both occasions was conducted by the same examiners, at the same place and under the same conditions.

### Statistical analysis

Statistical tests included Student's t-test for differences in age and Spearman's  $\rho$  correlation coefficient for prevalence of PTSD and depression. Differences in the frequency of traumatic experiences and socio-demographic data, prevalence of PTSD, depression and suicidal thoughts were tested with the  $\chi^2$  test. The level of significance of differences was set to  $P < 0.05$ . Data were statistically analysed using the Statistical Package for Social Sciences, version 10.0 (SPSS Inc. Chicago, IL. USA).

### Results

In the group of students involved in the "Girlfriends" School Project there were more girls than boys, 230 (68.5%) out of 336, whereas in the control group there were 37 (51.4%) out of 72 ( $\chi^2$ -test=7.634,  $p=0.006$ ). The average age of the participants was  $13.6 \pm 1.9$  and there was no statistically significant difference in the average age of participants between the groups in the sample (t-test=0.713,  $p=0.476$ ). There was no significant difference in frequency of traumatic experiences among participants, except for destroyed houses, which informants involved in the School Project had significantly more often ( $p=0.003$ ) (Table 1). However, students involved in the School Project experienced, on average, statistically more traumatic experiences, 7.4 compared

to 5.0 in their peers from the control group (t-test=3.260, p=0.001).

In accordance with the DSM criteria, during the first measuring, PTSD was recorded at total of 43.4% of participants in a total sample. Students involved in the School Project had a prevalence of PTSD

46.1%, which was statistically significant compared to the students (30.5%) who were not involved in this psychosocial project ( $\chi^2$ -test=5.856, p=0.016) (see Table 2).

In the group involved in the School Project, there was a statistically significant difference in the number of girls, 50.0% out of 230

Table 1 Distribution of adolescents according to frequency of traumatic experiences amongst adolescents in Bosnia and Herzegovina with or without assistance from the Humanitarian Association, ten years after the end of the 1992-95 war

Trauma	Assistance HA (n=336)	Without assistance HA (n=72)	Total (n=408)	$\chi^2$ test	df	p
	n (%)	n (%)	n (%)			
Refugee abroad	62 (18.5)	12 (16.7)	74 (18.1)	0.135	1	0.713
Forced returnee	18 (5.4)	5 (6.9)	23 (5.6)	0.281	1	0.596
Forced to leave home during the war	143 (42.6)	24 (33.3)	167 (40.9)	2.088	1	0.149
Returnee	65 (19.3)	10 (13.9)	75 (18.4)	1.177	1	0.278
Lost family member during the war	150 (44.6)	36 (50)	186 (45.6)	0.686	1	0.408
Mother killed	5 (1.5)	1 (1.4)	6 (1.5)	0.019	1	0.890
Father killed	27 (8.0)	5 (6.9)	32 (7.8)	0.080	1	0.777
Uncle killed	66 (19.6)	12 (15.7)	78 (19.1)	0.340	1	0.560
Grandfather killed	40 (11.9)	5 (6.9)	45 (11.0)	1.487	1	0.223
Close relative killed	43 (12.8)	7 (9.7)	50 (12.3)	0.522	1	0.470
Close person killed	10 (3.0)	5 (6.9)	15 (3.7)	2.637	1	0.104
Good friend killed in the war	39 (11.6)	6 (8.3)	45 (11.0)	0.648	1	0.421
Home destroyed in the war	99 (29.5)	9 (12.5)	108 (26.5)	8.767	1	0.003
Lost someone close to me	149 (44.4)	35 (48.6)	184 (48.1)	0.436	1	0.506

HA= Humanitarian Association "Girlfriends"

Table 2 Prevalence of posttraumatic stress disorder and depression amongst Bosnia-Herzegovina students from both entities, involved and not involved in psychosocial assistance – School Project "Girlfriends"

Diagnosis		n (%) students with diagnosis of PTSD and depression			$\chi^2$ -test	df	p
		Yes HA (n=336)	No HA (n=72)	Total (n=408)			
		n (%)	n (%)	n (%)			
PTSD A	yes	155 (46.1)	22 (30.5)	177 (43.4)	5.856	1	0.016
	no	181 (53.9)	50 (69.5)	231 (56.6)			
PTSD B	yes	45 (13.4)	17 (23.6)	62 (15.2)	4.804	1	0.028
	no	291 (86.6)	55 (76.4)	346 (84.8)			
Depression A	yes	86 (25.6)	16 (22.2)	102 (25.0)	0.360	1	0.549
	no	250 (74.4)	56 (77.8)	306 (75.0)			
Depression B	yes	6 (1.8)	8 (11.1)	14 (3.4)	15.561	1	<0.001
	no	330 (98.2)	64 (88.9)	394 (96.6)			

PTSD = Posttraumatic stress disorder; HA= Humanitarian Association "Girlfriends";

A - The first testing took place at the beginning of December 2005; B - The second testing took place at the end of May 2006;

p = the level of significant differences of results between two groups

and boys, 37.7% out of 106 ( $\chi^2$ -test=4.392,  $p=0.036$ ). Among the RS students, 49.2% had PTSD, whereas in the Federation of BH, 42.7%, without a statistically significant difference ( $\chi^2$ -test=1.416,  $p=0.234$ ).

The second assessment showed 13.4% of students with PTSD in the group involved in the School Project, which is a statistically significant reduction, according to the McNemar test  $p<0.001$ . In the group not involved in the School Project, there was also a reduction in the prevalence of PTSP to 23.6%, which is statistically non-significant, according to the McNemar test,  $p=0.332$  (Table 3).

The prevalence of PTSD in the second assessment was statistically more significant among students not involved in the School Project 23.6% compared to those involved: 13.4% ( $\chi^2$ -test=4.804,  $p=0.028$ ) (Table 2).

In accordance with the DSM criteria, during the first assessment depression was

recorded in a total of 25.0% of informants in the total sample. Students involved in the School Project had a 25.6% prevalence of depression, which was not statistically significant compared to the students (22.2%) who were not involved in this psychosocial project ( $\chi^2$ -test=0.360,  $p=0.549$ ) (see Table 2). In the group involved in the School Project, there was a statistically significant difference in the number of girls, 29.1% out of 230, and boys, 17.9% out of 106 ( $\chi^2$ -test=4.784,  $p=0.029$ ). Among the RS students, there were 29.6.2% with PTSD, and 21.0% in the Federation of BH, without any statistically significant difference ( $\chi^2$ -test=3.241,  $p=0.072$ ).

The second assessment showed 1.8% of students with depression in the group involved in the School Project, which is a statistically significant reduction, according to the McNemar test (Table 3). In the group

Table 3 Distribution of students according to prevalence of diagnosis of depression and PTSD after first and second testing in terms of involvement in the School project of psychosocial assistance in Bosnia and Herzegovina, ten years after the 1992-95 war finished

Involved in the School Project HA "Girlfriends"	Depression second test							
	Depression - first test	Yes	No	Total	$\chi^2$ -test	df	p	p*
Yes	Yes	4	82	86	5.411	1	0.020	<0.001
	No	2	248	250				
	Total	6	330	336				
No	Yes	4	12	16	4.018	1	0.045	0.077
	No	4	52	56				
	Total	8	64	72				
PTSD- second test								
	PTSD- first test	Yes	No	Total				
Yes	Yes	32	123	155	13.047	1	<0.001	<0.001
	No	13	168	181				
	Total	45	291	336				
No	Yes	11	11	22	12.232	1	<0.001	0.332
	No	6	44	50				
	Total	17	55	72				

HA=Humanitarian Association "Girlfriends"; \*McNemar test

Table 4 Pearson's correlation "r" of age average, total number of traumatic episodes, severity of depression, severity of PTSD and suicidal thoughts between students (n=408) from primary and secondary schools in both entities in Bosnia and Herzegovina

Severity	Pearson's correlation	Age average	Mean number of traumas	Severity of depression symptoms	Severity of PTSD symptoms
Trauma experiences	r	0.157			
	p	0.001			
Depression symptoms	r	0.116	0.236		
	p	0.019	<0.001		
PTSD symptoms	r	-0.161	0.407	0.342	
	p	0.001	<0.001	<0.001	
Suicidal thoughts	r	-0.024	0.171	0.448	0.192
	p	0.629	0.001	<0.001	<0.001

r=Pearson's correlation coefficient

not involved in the School Project, there was also a reduction in the prevalence of depression to 11.1%, which is statistically non-significant, according to the McNemar test (Table 3). The prevalence of depression in the second assessment was statistically more significant among students not involved in the School Project, 11.1% compared to those that were involved, 1.8% (Table 2).

We found that the age of students was positively associated with the mean number of traumatic experiences and severity of depressive symptoms and negatively associated to the severity of PTSD symptom, while age did not affect fluctuation of suicidal thoughts in students (Table 4). The total number of traumatic experiences was positively associated with depression and PTSD symptom intensity, and suicidal thoughts. Suicidal thoughts were positively associated with the intensity of PTSD and depression symptoms, also the intensity of PTSD symptoms was positively associated with the intensity of depression (Table 4).

## Discussion

Our research has shown that at the beginning of the research there were no significant

statistical differences among primary and secondary school students in the reports of certain traumatic experiences between the group involved in the School project and the control group, except in cases where the students' houses had been destroyed. The group of students involved in the school project reported statistically more houses destroyed. Regarding survival, the average number of traumas, students from the school group had a significantly higher average than their peers from the control group. All the children had a number of traumatic experiences during the war, especially loss of close family members, which has been described in the literature (1, 4-15, 19, 20)

The presence of PTSD and depression among the students in both entities in North-Eastern Bosnia did not differ statistically. However, the statistics showed that there was more PTSD and depression among the girls than the boys involved in the School project (1, 4), as well as in other research (7-9).

During the second assessment the prevalence of PTSD and depression was reduced statistically in the group where the members of the School project team had worked in compliance with their plan and program of

psycho-social help and there was a reduction in prevailing prejudices regarding acceptance and differences, as well as a reduction in aggressive features among the children, brought about by connecting children, parents, teachers and school management in both entities, as well as the establishment of Students' clubs as part of the schools in which they work.

The intensity of PTSD and depression symptoms were positively associated (4, 21-23) while they also correlated with the number of traumatic experiences and the presence and intensity of suicidal thoughts (4).

Our research has certain limitations taking into account a number of post war traumas that the children were exposed to. Measurement of PTSD and depression levels ten years after the war cannot be an assurance that the obtained results are only based on the consequences of war trauma. The level of PTSD and depression can increase or decrease over a period of time for unknown reasons (1, 4). Little is known about these children and adolescents, the social experiences and additional traumas they had after the war considering the fact that BH is in a transitional period with constant changes of the social framework. This School project justified its existence and may be an example for the development of new similar projects that should be included in all existing primary and secondary schools if possible (13). Further research is needed to understand better the psychological effects of war trauma on young war victims, and the natural course of posttraumatic symptoms, so as to improve interventions targeted at this vulnerable population (14).

## Conclusion

This study suggests that work with students on psychosocial support within the School Project resulted in a significant reduction of PTSD and depression prevalence amongst

the involved students compared to the controls. Girls presented more severe PTSD and depressive symptoms than the boys. Schools and other institutions ought to envisage as many projects as possible to be implemented in school and out-of-school to assist young people to easier overcome the consequences of the traumatic war in their development.

The findings of this research can be used for recommendations for enhancement and improvement of the primary and secondary educational system, which, besides regular teaching should also have aspects of psycho-social support for traumatized students. Awareness of trauma of students can help teaching staff and school management to develop more efficient approaches in their work with these students instead of a repressive approach.

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## Authors' contributions:

Conception and design: MH, SS, MR, MŠ, EH and JH; Acquisition, analysis and interpretation of data: MH, SS, MR, MŠ, EH and JH; Drafting the article: MH; Critical revision for important intellectual content: MH, SS and RH.

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