

Behavioral Response of People in Belgrade to the Bombing Campaign During 1999

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SUMMARY

Introduction In contrast to numerous reports on long-term psychological consequences of disasters, the literature addressing the acute impact of intentional collective disaster is limited.

Objective This research aimed to examine the impact of the bombing campaign on the behavior of people living in Belgrade during the air attacks in 1999.

Methods The questionnaire was designed and administered to 231 participants. Psychological distress symptoms were assessed using the Symptom Checklist-Revised (SCL-90-R).

Results Participants reported fear and anger as dominant feelings, and the majority of them complained about sleep disturbance, body weight change, and loss of interest for sexual activity. Regression analysis of the scores of the SCL-90-R revealed significant effects of the duration of living under the stress of air attacks, age and gender of the participants and living in the risky areas of the city, upon the scores on Anxiety and Depression dimension.

Conclusion The results of the study contributed to our understanding of the processes through which individuals pass during a long lasting bombardment. It can be beneficial for mental health services in evaluating which actions of care and support could be most suitable.

Keywords: disaster; stress; response; behavior; symptom

INTRODUCTION

In contrast to numerous reports on long-term psychological consequences of disasters and post-traumatic stress disorder, the literature addressing the acute impact of intentional collective disaster is limited. This may be attributed to a relatively small number of mass disasters related to violence as well as to difficulties in conducting research of stress responses during such disasters.

In 1999, citizens of Serbia and Montenegro were exposed to the bombing campaign conducted by the North Atlantic Treaty Organization (NATO) forces against the regime in Belgrade. To-date, the studies published on this topic were conducted at least a year after the disaster [1, 2].

presented in Table 1. The mean age of the participants was 32.8 years, with a range from 19 to 64 years. Age of the participants significantly correlated with educational level ($\chi^2_{(6, N=231)}=17.32$, $p<0.01$) and parenthood ($\chi^2_{(6, N=231)}=20.28$, $p<0.01$); however, these correlations disappeared when only the participants older than 26 were analyzed (age-education $\chi^2_{(4, N=108)}=4.36$, ns; age-parenthood $\chi^2_{(4, N=108)}=7.02$, ns).

Thirty-four people (14.7%) had a close family member recruited to the army and sent to Kosovo, and 27 people (11.7%) lived in the areas of the city that were frequent targets of bombing and had directly witnessed destruction. These groups were marked as highly vulnerable.

OBJECTIVE

This study, which aims to assess behavioral responses of subjects in Belgrade to this traumatic experience, was conducted during the 1999 bombing campaign and contains authentic responses of subjects recorded at the time of material destruction, exposure to high risk of death and injury, and socio-cultural disorganization.

Measures

The questionnaire used in the study consisted of 49 free response questions: 11 questions about participants' demographic characteristics (age, gender, marital status, education, employment, parenthood, vulnerability due to the above mentioned circumstances, exposure to stress prior to the bombardment) and 38 questions to further examine participants' experience of the disaster. The latter subsection was designed according to the specific typology of behavioral responses measured in disaster studies [3]. Answers were classified into empirically derived categories depending on the frequency of certain responses.

METHODS

Participants

The sample comprised 231 individuals from Belgrade, whose demographic characteristics are

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Table 1. Demographic and social characteristics of the sample (N=231)

Characteristics		N	%
Gender	Male	75	32.5
	Female	156	67.5
Age range (years)	19–25	123	53.2
	26–40	43	18.6
	41–60	59	25.5
	61–64	6	2.7
School degree (completed)	Primary school	15	6.5
	High school	155	67.1
	University degree	61	26.4
Parenthood	Non-parents	153	66.2
	Parents	78	33.8
Vulnerability due to special circumstances	Eye-witnessing of destruction	27	11.7
	Family member recruited	34	14.7
	No	170	73.6

N – number of participants

The Symptom Checklist-90-R (SCL-90-R) was also administered to all participants. The items were scored and interpreted in terms of nine primary symptom dimensions and three global indices of distress [4].

Procedure

The study began on the 6th of April in 1999, two weeks after the beginning of the campaign, and ending on the 6th of June, a few days before the campaign was formally ended. Among the 330 recruited participants only those (231) who completed both the questionnaire and the scale according to standard recommendations and who had not experienced trauma prior to the bombardment were selected for this report.

Statistical analysis

Gender, age, education level, parenthood, vulnerability and time elapsed from the beginning of the campaign were treated as independent variables. Time was treated as a continuous variable ranging from 1 (the first day of the campaign) to 81 (the last day of the campaign).

Participants' responses to the questionnaire were analyzed using stepwise logistic regression analysis with non-hierarchical models. The models that fitted best to the observed frequencies were adopted. In the cases where only a single predictor variable was significantly associated with the outcome, this analysis was replaced by the Chi-square test. In all analyses N=231.

Analysis of the mean scores on the SCL-90-R was made using stepwise regression analysis with independent variables and their mutual interactions as predictors.

The Bonferroni correction was applied to the original alpha=0.05 because of substantial multiple testing. Therefore, alpha was set at 0.05/33=0.0015 for the logistic regression analysis, and at 0.05/9=0.0055 in testing the

subscales of the SCL-90-R. However, since the data from this study are exploratory in nature, this report contains all differences or correlations where $p < 0.05$, but emphasizes those where p was less than the Bonferroni corrected values.

RESULTS

Fear was a dominant feeling for the majority (85.7%) of participants, especially at the beginning of the campaign. Among those participants who reported fear, slightly over half (58.0%) were afraid of death and invalidity, 15.6% were afraid of ensuing poverty, and 26.4% cited other reasons. The hardest moment for 46.1% of the participants was the first day of the campaign, for 34.6% when something near them was hit for the first time, for 12.1% when the first civilians were killed, while 8.2% cited other moments. The sound of the sirens that notified attacks was a particularly stressful trigger; in 51.1% of the participants it evoked emotional reactions, in 29.9% of them somato-vegetative symptoms (palpitations, nausea, vertigo), and 6.1% performed senseless activities. However, only 42.0% were going to shelters.

At the same time, 41.6% participants also reported hate and anger, 86.1% of those directed mostly against politicians, 9.1% towards the American people, and surprisingly, only 4.8% against Albanians (the conflict with Kosovo Albanians was the immediate reason for the campaign).

Psychosomatic problems (heart palpitations and gastrointestinal problems) were reported by 36.8% of the participants. In addition, 58.0% reported sleep disturbances.

Morning tiredness (38.1%), loss of interest for sexual activity (52.0%), loss of body weight (25.5%), neglect of appearance (26.0%), and decrease in general activity (43.7%) indicated signs of depression.

Some participants turned to "anxiety relievers"; 35.1% reported increased smoking, 12.6% increased drinking, 19.5% higher usage of sedatives, and 26.4% experienced increased food intake. 20.8% cited that they became more religious, while 13% became more superstitious.

The most important social change was improvement of social ties; participants reported spending more time with their families (63.6%) and friends (59.3%) than before, quarrelling less than before (39.8%), and found other people more friendly (50.6%).

Age and the duration of residence under these conditions turned out to be most significant predictors for the majority of the outcome variables (Table 2). Sleeping problems, increase in smoking and growth of religious feelings became less frequent with time. Time was also associated with a decrease in reporting somato-vegetative symptoms ($\beta = -0.032$, odds=0.968, $\chi^2_{(1, N=231)} = 16.35$, $p < 0.001$) and in perceiving other people as more friendly ($\beta = -0.041$, odds=0.959, $\chi^2_{(1, N=231)} = 13.54$, $p < 0.001$), while a number of those that reported frequent quarrelling with others and increase in food intake increased ($\beta = 0.044$, odds=1.045, $\chi^2_{(1, N=231)} = 15.12$, $p < 0.001$ for quarrelling, and $\beta = 0.033$, odds=1.033, $\chi^2_{(1, N=231)} = 13.94$, $p < 0.001$ for food intake).

Table 2. Logistic regression analysis of impact of risk factors on participants' responses*

Outcome measures	Risk factor	Parameter estimated				Overall model
		β	df	Wald χ^2	OR	
Sleeping problems	Time	-0.031	1	10.34	0.927	$\chi^2_{(5,N=231)}=3.23$, NS
	Gender	0.113	1	11.65	1.120	
	Witnessing destruction	0.762	1	11.73	2.143	
	Age >40 years	0.291	1	12.79	1.339	
Increase in smoking	Time	-0.033	1	13.74	0.968	$\chi^2_{(1,N=231)}=0.92$, NS
	Age >40 years	0.854	1	14.17	2.349	
Growth of religious feelings	Time	-0.036	1	19.02	0.965	$\chi^2_{(1,N=231)}=0.85$, NS
	Age >40 years	0.78	1	13.28	2.181	
Spending more time with family	Age >40 years	1.25	1	19.84	3.490	$\chi^2_{(5,N=231)}=0.88$, NS
	Parenthood	1.14	1	17.03	3.127	
	Age >40 years \times Parenthood	0.98	1	15.47	2.664	

* all $p < 0.0015$ for Wald χ^2 values (Bonferroni corrected value)
df – degree of freedom; OR – odds ratio; NS – not statistically significant

Table 3. Analysis of impact of risk factors on SCL scores**

Dimension	Risk factor	Parameter estimated			
		b	SE	stand. β	df
Anxiety	Time	-0.13	0.01	-0.37	1
	Gender	0.25	0.02	0.45	1
	Witnessing destruction	0.33	0.01	0.79	1
Depression	Time	0.12	0.006	0.57	1
	Gender	0.26	0.02	0.53	1
	Witnessing destruction	0.39	0.03	0.85	1
Somatization	Age >40 years	0.15	0.01	0.52	1
	Witnessing destruction	0.39	0.02	0.64	1

** $p < 0.05$, but $p > 0.0055$ (Bonferroni corrected value) for all risk factors
b – coefficient; SE – statistical error

Pessimism also increased with time, but not significantly ($\beta=0.012$, odds=1.01, $\chi^2_{(1,N=231)}=2.87$, $p=0.09$).

Subjects over the age of 40 had a higher incidence of sleeping problems, increased cigarette consumption, and reported growth of religious feelings more frequently, while tendency for spending more time with family was more frequent both among those older than 40 years and among the parents. Sleeping difficulties were reported more often by women (68% vs. 53.2% of men) and by people living in frequently bombed areas of the city (77.8% vs. 52.9% of those from the spared areas).

Regression analysis applied to the scores on the SCL-90-R (Table 3) revealed significant effects of time, gender and witnessing destruction upon the scores on Anxiety and Depression dimension. Scores on anxiety were decreasing, while those on Depression were increasing with time. Scores on both dimensions were significantly higher in women and in people from the risky areas of the city. Witnessing destruction and age over 40 were also related to the increased scores on Somatization. However, none of the predictors had significant effect upon the general severity index (GSI).

DISCUSSION

Cohen et al. [5] have identified four phases in the response to disaster. Although their model applies to short-term disasters and describes the period following the disaster,

one can still recognize the elements of the first three phases in the responses of our participants during the disaster. Strong emotions, anxiety, sleeping problems, somatic symptoms, and improved social cohesion, which correspond to Cohen's phases I and II, dominated in the beginning of the campaign, but decreased gradually, and were replaced by signs of depression and increasing pessimism, often seen in the third phase. Disagreements between the Cohen's model and findings from our study (overlaps between phases, lack of intrusive symptoms, early onset of somatic and depression symptoms as compared to the model) can be explained by the prolonged, months-long duration of the stressor which modulated the time evolution of reactions.

Some citizens of Belgrade increased smoking, alcohol consumption, and sedatives and food intake. Investigation conducted among medical students in Belgrade demonstrated that substance abuse was one of the nine modes of coping during the air attacks [1]. A random survey conducted among residents of New York City after the terrorist attacks [6], also showed an increase in smoking and in alcohol consumption. In addition, persons who increased smoking of cigarettes and marijuana were more likely to experience posttraumatic stress disorder than were those who did not, with more common depression among those who increased cigarette smoking and alcohol consumption. In our study, the association between increased use of sedative and elevated Depression scores were found in people with university degree. However, the lack of data

about pre-traumatic psychological profile of examinees makes our discussion about this issue limited.

Growth of religious feelings was apparent at the beginning of the campaign, particularly among the elderly participants. This may have been related to feelings of helplessness that the participants reported, as well as to the widespread perception that the bombardment was an act of oppression and violation of justice that God should and will restore. The latter was also strongly suggested by the official propaganda. Other studies also reported changes in the ethical core of the belief system and the concept of justice following disasters [7, 8, 9].

The middle-aged and older participants tended to suffer from sleep disturbances and somatic symptoms more often than younger participants. It is recognized that caretaking responsibilities for family members results in a higher level of psychopathological disturbances [10, 11]. These participants were spending more time with family, friends or neighbors. Similar behavior was observed in the study of the Israeli population exposed to terrorism [12], which emphasizes the importance of social support in coping with stressful situations.

Women were significantly more affected than men by anxiety and depression, and reported sleep disturbances more frequently. Although this can be observed even in the absence of disaster [13, 14], many studies suggest that women are more affected by disasters than men [8, 11, 15], and develop post-traumatic stress disorder (PTSD) at higher rates than men when exposed to similar types of violent events [16]. The literature suggests that these reactions are highly influenced by gender stereotypes and personal attributes of men and women [17, 18].

Witnessing destruction contributed significantly to sleeping disturbances and increase in psychopathological symptoms as measured by SCL-90-R. The eye-witnessing of the destruction of homes and personal losses have been highlighted as background for a higher level of psychological disorders [19]. Contrary to these findings, some authors have found that the impact of a major national trauma is not limited to those who experience it directly [12].

The results of this study demonstrated that stressful experience with witnessing the bombing of their own town significantly changed behavior of the citizens of Belgrade. Previous studies showed that population affected by the war in the former Yugoslavia had been exposed to multiple

stressful experiences and suggested that those experiences were associated with a substantially increased risk of PTSD and major depressive disorder (MDD) [9, 20, 21]. Moreover, authors reported that other sequels such as anxiety, somatization, complicated grief and complex PTSD with explosive forms of anger could be also a result of war traumatic events [20-24]. Since such war experience has direct threats to life and psychological integrity of the exposed population in Serbia, more effective mental health care is necessary and it should be based on better understanding of issues of cultural and social context, cumulative effects of stressors, resilience, recovery, coping mechanisms, and impact of war trauma on individual, family and community functioning [25].

The findings in this report are subject to at least three limitations. First, when interpreting the time evolution of participants' behavior, one should keep in mind that it can only be thought of as a trend since we were not able to re-interview the participants. Second, there are no norms for the spam confidence level (SCL) value for the Serbian population that might serve as a reference point for absolute comparisons; therefore, we were limited to studying the differences in scores related to the demographic characteristics and time elapsed from the beginning of the campaign. Furthermore, the responses of our participants may have been reflecting not only the impact of acute stress caused by the air attacks, but also cumulative effects of several years of living under economic sanctions in poverty and conflict.

CONCLUSION

The results of the study brought insights that add to our understanding of the processes through which individuals pass during a long lasting bombardment. We hope that it will help mental health services in evaluating which actions of care and support are most suitable, what activities match the best cultural context, and which parts of populations were disproportionately distressed.

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Промене понашања људи у Београду током бомбардовања 1999. године

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КРАТАК САДРЖАЈ

Увод За разлику од бројних истраживања дугорочних последица катастрофа на психолошко стање људи, о акутном утицају нема много студија.

Циљ рада Циљ овог истраживања био је да се утврди утицај бомбардовања на промену понашања људи у Београду током ваздушних напада 1999. године.

Методе рада Посебно дизајнираним упитником интервјуисана је 231 особа. Психолошко стање испитаника је анализирано помоћу психометријског теста *Symptom Checklist (SCL-90-R)*.

Резултати Учесници су пријављивали страх и бес као доминантна осећања и већина се жалила на поремећај спавања,

промене телесне тежине и губитак интересовања за сексуалне активности. Регресиона анализа скорова са *SCL-90-R* теста показала је да су на појаву анксиозности и депресије код испитаника значајан утицај имали старост и пол учесника, дужина изложености стресу од ваздушних напада и становање у ризичним деловима града.

Закључак Резултати студије побољшавају наше разумевање процеса кроз које особе пролазе током дуготрајног бомбардовања. Они могу бити корисни служби менталног здравља у избору прикладних мера и активности подршке и помоћи овим људима.

Кључне речи: катастрофа; стрес; одговор; понашање; симптом