

ORIGINAL PAPER

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Symptoms of acute stress in Jewish and Arab Israeli citizens during the Second Lebanon War

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Abstract *Background* The “Second Lebanon War” exposed northern Israel to massive missile attacks, aimed at civilian centers, Jewish and Arab, for a period of several weeks. *Objective* To assess prevalence of acute stress disorder (ASD) and acute stress symptoms (ASS) in Jewish and Arab samples, and their correlates with demographic and exposure variables. *Method* Telephone survey conducted in the third week of the second Lebanon war with a random sample of 133 Jewish and 66 Arab adult residents of northern Israel. ASD, ASS and symptoms-related impairment were measured by the Acute Stress Disorder Interview (ASDI) questionnaire, in addition to war-related exposure and demographic data. *Results* The majority of respondents experienced at least one of four symptom groups of ASD, 5.5% of the Jewish respondents and 20.3% of the Arabs met the criteria of ASD. Higher rates of Arab respondents reported symptoms of dissociation, reexperiencing and arousal, but a similar rate of avoidance was reported by the two samples. Higher mean scores of ASS and of symptoms-related impairment were reported by the Arab respondents. According to multiple regression analyses, younger age, female gender, Arab ethnicity and experiencing the war more intensely as a stressor significantly explained ASS variance, while Arab ethnicity and proximity to missiles exploding significantly explained the variance of symptoms-related impairment. *Conclusions* A substantial rate of participants experienced symptoms of acute stress, while for only small proportion were the symptoms consistent with ASD. Higher ASD and ASS were reported by the Arab sample, calling attention to the need to build interventions to reduce the present symptoms and to help prepare for possible similar situations in the future.

Key words acute stress disorder – acute stress symptoms – war – ethnicity

Introduction

The second Lebanon war in July–August 2006 exposed the whole area of northern Israel to missile attacks. Missiles struck most of the towns and villages in northern Israel, including Arab settlements [23]; the entire northern population actually experienced the trauma of war, thus meeting the stressor criterion for acute stress disorder (ASD). The diagnostic criterion for ASD is defined as exposure to or witnessing an event that was a threat to the person or to others, and reacting to the event by intense fear, helplessness or horror. Next, the ASD criterion requires the presence of symptoms of dissociation, reexperiencing, avoidance and arousal [2, 10]. According to the definition, ASD is limited to the first month after the traumatic event, while enduring symptoms tend to become the chronic condition of posttraumatic stress disorder (PTSD) [10]. Bryant and Harvey [10] have suggested that in addition to measuring ASD and ASS, it is warranted to measure the degree these symptoms impair individuals’ everyday functioning.

Many studies have examined PTSD in consequence of war, terror, and other traumatic situations [1, 17, 26] but few have studied the prevalence and risk factors for ASD during or shortly after exposure of adults to traumatic events. In these few investigations the prevalence of ASD ranged from 6% in industrial accidents [16], through 7% in natural disasters [31], 13% in victims of vehicle accidents [18], assault, and burns [19], to 33% in witnesses to mass shooting [12]. Acute stress disorder and acute stress symptoms (ASS) have been the subject of some other studies. Acute stress symptoms were found in 12.4% of the US population 9–23 days after the September 11 terror attack [13]. Schuster et al. [27] assessed stress

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symptoms 3–5 days after September 11, using an adapted PTSD questionnaire. They found that more than 90% of US adults experienced at least one of five acute stress symptoms, while 44% experienced at least one substantial symptom of stress. Bleich et al. [7] found that following the continuous terror attacks during the Al-Aqsa Intifada in Israel, 76% of a random sample of adult Israelis reported experiencing at least one stress symptom.

Only few studies have assessed the predictors of ASD. Existing studies report that higher risk for ASD was associated with younger age [11, 18], female gender [7, 11], previous psychiatric dysfunction, or previous exposure to trauma [3, 19]. Variables of exposure to trauma were also found to affect acute stress symptoms, especially proximity to the site of a traumatic event and indirect exposure through watching TV coverage of the traumatic events [13, 27].

Ethnicity was found to affect the reaction to terror in some studies [27] but not in others [13, 17]. Jewish or Arab ethnicity in the context of terror in Israel is an especially relevant factor. The threat of terror during the Al-Aqsa Intifada, which was directed at Jews but struck Arabs too, generated similar [15, 29] or higher [6, 21] levels of distress or PTSD in the Jewish and Arab populations. However, the second Lebanon war, more than previous wars, posed a more intense threat to Arab Israelis. It found them less prepared emotionally and practically to cope with the threat. Indeed, lower preparedness for other traumatic events was previously found to be a risk factor for higher emotional distress [4]. Concern about relatives in Lebanon caused additional stress and anxiety in the Arab population in Israel.

Empirical evidence shows that ASD, and especially its dissociation component, is a substantial risk factor in the development of PTSD [8, 9]. It is important to study the prevalence and correlates of ASD in the period of war in order to construct efficient interventions to prevent PTSD. The aim of the present study was to assess the prevalence of ASD and ASS in Jewish and Arab residents of the north of Israel and their demographic and exposure correlates.

Method

■ Data collection and sample

A random sample of 199 residents of northern Israel participated in the study, conducted in the third week of the second Lebanon war, July 2006. Arab and Jewish respondents were sampled separately according to the separate telephone company data bases of the two populations residing in the north; this was to allow a higher rate of Arabs than their actual rate (19.3%) in the population. Adults aged 18 years and older were eligible for the study. Interviewers called the sampled individuals by phone. One respondent from each household was randomly selected. If a call to a given number was unanswered, the call was repeated up to five times. The interviewers, social work students, were trained for the specific interview and were supervised during the survey.

There was no answer or no adult person was at home for calls to 636 of the sampled numbers (436 of these unanswered calls were made to the Galilee, a region that many residents had left for the duration of the war; five phones lines were not connected and 121 were companies or public phones) and 122 people refused to participate (98 Jews and 24 Arabs). Response rate was calculated as the ratio of the number of completed interviews to the number of sample respondents drawn minus respondents considered out-of-scope [28]. Accordingly, response rate was 62%: 57.6% of the Jewish respondents and 73.3% of the Arab respondents. The questions were answered in Hebrew or Arabic. Haifa University's Ethics committee approval was obtained.

Respondents' demographic characteristics are shown in Table 1. The study was over-sampled for women, which is typical for telephone surveys [27]. The Arab respondents were divided between Muslims ($n = 40$, 60.7%) and Christians ($n = 26$, 39.4%). Distribution of age, gender, marital status and having children was similar in the Jewish and Arab respondents, while higher education and higher perceived economic status was reported by the Jewish respondents, which reflects actual differences in the Israeli population [22].

■ Instruments

Demographic data covered age, gender, education, religion, marital status, number of children, and perceived economic status.

War-related data covered (a) Intensity of missile attacks. Residential areas were grouped as high, medium and low intensity, according to the number of missiles that struck: Galilee, with 3,530 missiles and people killed and seriously wounded (high intensity); Haifa and surroundings, with 230 missiles and people killed and seriously wounded (medium intensity); and the "Valleys" area, with 221 missiles, mostly falling in open areas and only a few minor injuries sustained (low intensity). The Arab city of Nazareth, although located in the Valleys area, was included in the second category because of the number of people seriously wounded and killed in the city. (b) Perceived proximity of falling missiles was graded by participants on a 5-point scale from very close to very far. These were concentrated into three categories: very close, not very close, and far. (c) Watching TV coverage (including live news, extensive reports on missile damage and casualties, and discussions and analysis by experts). Respondents were asked for number of hours watching TV coverage per day. (d) Previous exposure to terror attacks was assessed by asking whether the respondent had ever been at the site of a terror attack, had been injured, or if a relative had been injured in a terror attack.

Acute Stress Disorder Interview (ASDI) [10] was used, to detail the specific experience of the war. This contains 19 dichotomously scored items (yes/no answers) that relate to dissociative symptoms (5 items), reexperiencing (6 items), avoidance (4 items), and arousal (6 items). Summing the affirmative responses to each symptom yields a total ASS score, ranging from 1 to 19, where a higher score indicates a higher level of ASS. ASD was affirmed if three out of five dissociative symptoms, and one out of each of the other symptom groups, was present, together with meeting the criterion of existence of an intense stressor. The stressor criterion was assessed by means of three items (risk of injury, fear, and helplessness) with yes/no questions. Yes answers to the three items met the criterion of experience of an intense stressor. Symptoms-related impairment is an additional measure, which assesses the effect of the symptoms on regular functioning [10]. It was assessed by four items (yes/no answers) assessing impairment arising from the symptoms (feeling upset, and interference with social life, work, and other activities). The ASDI was validated against DSM-IV criteria [10]. It was found to satisfy the criteria of internal consistency, construct validity, and test-retest reliability. It successfully identified 91% of participants clinically diagnosed with ASD and 93% who had not been diagnosed with ASD [10]. The questionnaire was translated from English into Hebrew and Arabic, and back translated to English, in order to confirm accuracy of translation [26]. Content validity was assessed by three experts and construct validity was assessed by factor analysis; both proved satisfactory. Internal consistency in the present study was .86.

Table 1 Demographic characteristics of Jewish and Arab participants

Variable	Jews (n = 133)	Arabs (n = 66)		Effect size
Mean age, y M (SD)	45.18 (14.89)	44.27 (12.40)	$t(194) = 1.87$	0.28
Education, y M (SD)	13.02 (3.21)	11.30 (2.95)	$t(194) = 3.59^{**}$	0.55
Gender, n (%)			$\chi^2(2) = 0.10$	0.07
	Male	20 (30.30)		
	Female	46 (69.70)		
Family status, n (%)			$\chi^2(1) = 0.89$	0.08
	Married	48 (72.73)		
	Not married	18 (27.27)		
Has children, n (%)			$\chi^2(1) = 0.61$	0.06
	Yes	58 (87.88)		
	No	8 (12.12)		
Economic status, n (%) ^a			$\chi^2(2) = 15.15^*$	0.27
	Good	7 (11.48)		
	Intermediate	41 (67.21)		
	Poor	13 (21.31)		

* $p < .01$, ** $p < .001$
^aFive answers are missing

■ **Statistical analysis**

Differences between Jewish and Arab respondents were calculated for demographics, overall prevalence of ASD, ASS, symptoms-related impairments and war-related variables, using χ^2 and t -test when appropriate. Multiple regression analyses were used to identify predictors of ASS and symptoms-related impairment. Data were weighted to adjust for the proportion of gender in the sample to that in the population [32]. Cohen’s d was calculated to assess the effect size of the differences between means of ASS and symptoms-related impairment and Phi was calculated to assess effect size of the differences between groups in categorical variables [14]. As only a small share of the respondents met the ASD criteria, ASS was used to assess the variables correlated with acute stress in the regression analyses. Also, as previous exposure to terror attack was very low, these variables were not entered into the regression analysis. Missing cases were excluded listwise.

Results

■ **War and terror exposure**

Table 2 shows war and terror exposure variables. A higher proportion of respondents were from areas of high and medium missile intensity, which is compatible with the distribution of population in these areas. Most respondents, but a lower proportion of

Arabs, reported that missiles exploded near them or their homes. No respondent had suffered direct harm to himself/herself, nor had their relatives, friends or property been harmed by the missile attacks. About 89% of the respondents watched TV coverage for more than 2 h daily, and 66.3% watched TV coverage for more than 8 h daily. Arab respondents reported spending more time than Jewish respondents watching TV. The differences obtained carried a moderate effect size. Only few had been present at terror bombing attacks during the years of Intifada, and fewer reported themselves or someone they knew being injured.

■ **ASD and ASS prevalence and severity**

About 70.7% ($n = 94$) of the Jewish respondents and 97% ($n = 64$) of the Arab respondents experienced the war situation as an intense stressor [$\chi^2(1) = 21.09$, $p < .01$, relatively strong effect size: 0.59]. About 95.5% of the Jewish ($n = 127$) and 100% ($n = 66$) of the Arab respondents experienced at least one of the four acute stress symptoms. However, rate of respondents that met the ASD criteria was substantially lower (Fig. 1): 5.5% of the Jewish and 20.3% of

Table 2 War and terror experience

	Jews (n = 133) n (%)	Arabs (n = 66) n (%)	χ^2	Effect size
Intensity of missiles			24.23**	0.38
High	68 (51.13)	50 (75.76)		
Medium	53 (39.85)	15 (22.73)		
Low	12 (9.02)	1 (1.51)		
Perceived proximity to missiles			15.79**	0.29
Very close	79 (59.40)	20 (30.30)		
Not very close	20 (15.04)	21 (31.82)		
Far	34 (25.56)	25 (37.88)		
Watch TV coverage			8.48*	0.23
0–2 h per day	22 (16.54)	5 (7.58)		
>2–5 h per day	22 (16.54)	12 (18.18)		
>5–8 h per day	12 (9.02)	1 (1.51)		
>8 h per day	77 (57.90)	48 (72.73)		
Was in a terror attack before	9 (6.77)	2 (3.03)	0.95	0.11
Relative or friend was in a terror attack	10 (7.52)	5 (7.58)	0.15	0.07

* $p < .05$, ** $p < .001$

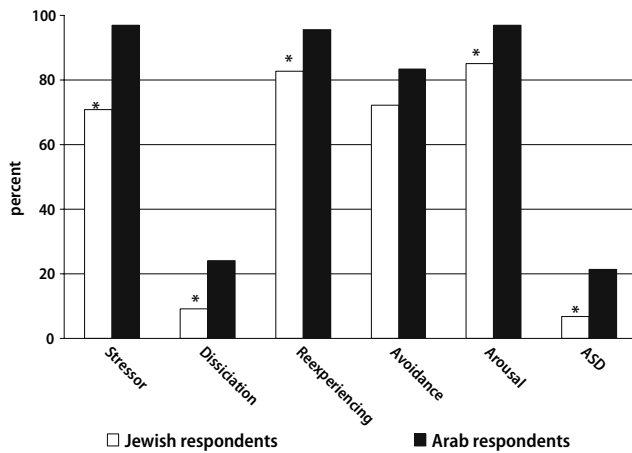


Fig 1 Prevalence of ASD in Jewish and Arab respondents. * $p < .05$

the Arab respondents met these criteria, with a significantly higher rate of ASD found in the Arab respondents [$\chi^2(1) = 9.26, p < .01$, moderate effect size: 0.22]. Also, significantly higher rates of meeting symptoms of dissociation [$\chi^2(1) = 8.45, p < .01$], reexperiencing [$\chi^2(1) = 14.56, p < .001$] and arousal [$\chi^2(1) = 6.47, p < .05$], but not avoidance [$\chi^2(1) = 2.30, p > .05$], were found in the Arab respondents. Among the four symptoms groups, a lower rate was reported for dissociation than for reexperiencing, avoidance and arousal.

Mean score of ASS was 7.75 in a range of 1–19, with lowest scores for dissociative symptoms and highest scores for arousal symptoms. Significantly higher mean scores for ASS, and for each of the symptoms, were obtained for the Arab respondents. Effect size for the differences between Arab and Jewish respondents was medium to large. Mean score of symptoms-related impairment was 1.43 (range 1–4), and it too was substantially higher in the Arab respondents, with strong effect size (Table 3).

Relationships among study variables

Table 4 shows the results of hierarchical regression analyses for ASS and symptoms-related impairment. For the assessment of ASS, demographic variables and war exposure variables were entered in two steps. Demographic variables explained 28% of variance of ASS, with age, gender and ethnicity as significant predictors. Age, gender and ethnicity remained significant predictors in the second step, together with the variable of experienced stressor. Together, the study variables explained 45% of ASS variability. The relationship between study variables and symptoms-related impairment was assessed in a three-step hierarchical regression: first demographic variables were entered, then war exposure variables in the second step, and the level of ASS was entered in the

Table 3 Psychological symptoms in Jewish and Arab respondents (Mean, SD and t test)

	Jews M (SD)	Arabs M (SD)	$t(197)$	d
Experience of stressor	1.18 (1.04)	2.64 (0.76)	-10.12***	1.53
Acute stress severity (ASS)	6.28 (0.50)	9.23 (3.77)	-5.16***	0.85
Dissociative symptoms	0.90 (0.98)	1.51 (1.34)	-3.66***	0.56
Reexperiencing	1.56 (1.00)	2.02 (0.72)	-3.30**	0.50
Avoidance	1.29 (1.09)	1.83 (1.33)	-3.07**	0.46
Arousal	2.54 (1.79)	3.98 (1.83)	-5.31***	0.80
Symptoms-related impairment	0.89 (0.95)	1.97 (1.05)	-7.24***	1.10

third step. Demographic variables explained 26% of symptoms-related impairment, with ethnicity the only significant variable. War-related exposure variables added an additional 8% to the explained variance of ASS, with perceived ethnicity and perceived proximity as the significant variables. In the third step, the addition of level of ASS explained a further 10% of variance, resulting in 44% of explained variance of symptoms-related impairment, with ethnicity, perceived proximity to missiles and ASS as the significant variables.

Discussion

In the midst of 6 weeks of continuous mass missile attacks launched against the north of Israel, a representative sample of adults living in the bombarded towns and villages were asked to report on their acute stress symptoms. A moderate rate of respondents met ASD criteria, but most of them reported at least one acute stress symptom. Rates of ASD and ASS scores, and symptoms-related impairment, were lower for the Jewish than for the Arab respondents, as was ASD-related impairment.

Only few studies on ASD in adults, against which the present findings can be compared, exist. However, the rate of ASD for Jewish respondents was lower than in the US population shortly after September 11. It was similar to the lower rates found following other isolated traumatic events [16, 31] and much lower than those in other such studies. The rate for the Arab respondents was higher than the rate in those studies [18, 19, 31] but lower than that for witnesses to a mass shooting [12]. Regarding stress symptoms, rates of experiencing at least one symptom were similar to Schuster et al.'s [27] findings following September 11 and Bleich et al.'s [7] findings for the successive terror attacks during the Al-Aqsa Intifada in Israel.

It can be concluded that although the trauma of Lebanon war was an enduring one, and the threat to life and property was real for long hours every day, the levels of ASD or ASS were not higher than those found for an isolated traumatic event or for the long

Table 4 Hierarchical regression analysis predicting ASS and symptoms-related impairment

Variables	Acute stress severity				Acute stress-related impairment			
	B	SE	β	ΔR^2	B	SE	β	ΔR^2
Step 1				.28				.26
Age	-.02	.01	-.29***		-.01	.01	-.09	
Gender ^a	.49	.16	.19**		.14	.15	.06	
Marital status ^b	-.15	.19	-.05		-.14	.17	.05	
Education	-.06	.04	-.14		-.01	.03	.01	
Economic status ^c	.18	.12	.12		.25	.12	.15*	
Ethnicity ^d	.48	.18	.19**		.94	.17	.40***	
Step 2				.17				.08
Age	-.02	.01	-.18**		.01	.01	.01	
Gender ^a	.16	.16	.25***		-.01	.16	-.07	
Marital status ^b	-.15	.17	-.04		.01	.17	.01	
Education	-.03	.03	-.09		.01	.03	.03	
Economic status ^c	.18	.12	.12		.12	.12	.13	
Ethnicity ^d	.20	.18	.24**		.72	.21	.31***	
Watching TV coverage	.15	.06	.07		.06	.06	.06	
Missile intensity	.07	.03	.04		.17	.09	.11	
Perceived proximity to missiles	.10	.05	.16		.34	.09	.18**	
Experienced stressor	.86	.19	.39***		.23	.08	.06	
Step 3								.10
Age					.01	-.01	.05	
Gender ^a					-.08	-.14	-.11	
Marital status ^b					.05	.15	.02	
Education					.02	.06	.05	
Economic status ^c					.18	.10	.09	
Ethnicity ^d					.75	.18	.30***	
Watching TV coverage					.02	.06	.05	
Missile intensity					.16	.08	.10	
Perceived proximity to missiles					.27	.06	.13*	
Experienced stressor					.19	.17	.11	
ASS					.28	.06	.45***	
R ²	.45				.44			
Adjusted R ²	.42				.40			
F(df)	15.86 (10.190)***				13.59 (11.188)***			

^a0 = Male, 1 = Female

^b0 = Married, 1 = Not married

^c0 = Fair, 1 = Poor

^d0 = Jewish, 1 = Arab

* $p < .05$, ** $p < .01$, *** $p < 0.001$

period of the Intifada. These results for the Jewish sample may be explained by the theory resilience development [6] as a result of living under the never-ending threat to Israel's existence and experiencing several wars and periods of terror, and also as a result of the ethos of survival engendered following the Holocaust. On the individual level, military service, which is mandatory for Israeli men and women, demands of soldiers to contend with difficult situations, and it may inoculate them against future trauma. In contrast to resilience theory, other scholars stress the powerful cumulative effect of continuous exposure to traumatic events. Repeated exposure to traumatic events over time may drain coping resources and create high levels of distress [24].

The higher rate of ASD in the Arab population may be explained from several angles. Although Arab citizens were randomly wounded and killed in terror attacks in the past, this was the first time they were directly threatened or injured. They had no previous experience of coping with threats of war that could

generate resilience. The Arab villages and cities were also less prepared for war, with a lack of shelters and secure rooms. This added to feelings of helplessness and lack of control, which are recognized as major protecting resources in traumatic encounters [5]. Another possible factor contributing to the higher distress in the Arabs was the experience of being torn between sympathy for the Palestinian struggle and being the target of Hizbullah missiles and that militia's indifference to their lives, as well as their concern for relatives living in Lebanon. Still another explanation may stem from the low resources theory [20], which suggests that individuals with lower resources respond with higher distress to stressful encounters and to traumatic events [25], especially terror [21].

In keeping with results of earlier studies on psychological reactions to traumatic events, female gender and younger age were related to higher ASS [6, 7, 11, 19, 30]. Actual exposure to traumatic events, perceived proximity, or exposure through watching TV coverage, were found in previous studies to

exacerbate acute stress symptoms or PTSD [13, 27]. In the present study only the perception of the stressor as more intense (generating more fear and helplessness) was related to higher ASS. This discrepancy might be explained by the circumstance of thousands of missiles being launched and striking almost every town and village, creating a feeling of exposure and vulnerability everywhere in the north. Also, the greater length of time spent watching TV coverage might not have been related to higher ASS due to the content of the broadcasts: together with live broadcast of missile damage and casualties, TV channels aired interviews, expert analyses, and messages from leaders, which had a calming effect.

This study is the first to report on acute stress reactions to a unique and enduring condition of missile attacks against a civilian population. It is also an addition to the very few studies assessing ASD or ASS in response to terror and war. Nevertheless, the study has several limitations. First, the absence of data on precedent psychological distress in the Arab, as against the Jewish, population, and of information on previous traumatic events (except exposure to terror attacks) limited the possibility of causal inferences. Second, in the more vulnerable areas a high rate of our calls were not answered as many people had left their homes for safer places in the center of Israel. There was no way to compare the groups. The high percentage of individuals who refused to participate may have affected the results. These might have been more distressed individuals, or individuals who differed in demographic or other characteristics. Third, use of the telephone interview to assess psychological properties, rather than a clinical face-to-face evaluation, increases the risk of misclassification regarding the outcome measures. Still, we used an ASD instrument validated against DSM-IV, which increased the chances of accuracy of classification [10]. Fourth, as ASD or ASS are transitional states, symptoms may decrease and disappear, or increase and become a chronic condition [10]. It is important to follow up studies on ASD to understand better the long-time effects of initial acute stress reaction.

The present study stresses the need to construct an acute stress screening procedure to identify individuals with extreme acute stress reactions, as well as interventions for them that can be implemented immediately in the time of the war. It especially highlights the need to invest special efforts and resources to prepare the Arab population better for possible future events. This should include increasing safety (for example, by building and equipping shelters) and psycho-educational preparation for all age groups (for example, in schools, community centers and old-age centers).

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