



Trauma, PTSD, Anxiety, and Resilience in Palestinian Children in the Gaza Strip

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Authors' contributions

This work was carried out in collaboration between both authors. Authors AMT designed the study and wrote the protocol. Author SST performed the data collection and statistical analysis, managed the literature search. Author AMT wrote the first draft of the manuscript with assistance from author. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/BJESBS/2015/19101

Editor(s):

(1) William Jankowiak, Department of Anthropology, University of Nevada,
USA.

Reviewers:

(1) Anonymous, USA.

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(4) Muhammad Kristiawan, PGRI University of Palembang, Indonesia.

Complete Peer review History: <http://sciencedomain.org/review-history/10267>

Original Research Article

Received 25th May 2015
Accepted 10th July 2015
Published 21st July 2015

ABSTRACT

Aims: The aim of the study was to investigate the effect of traumatic events due to eight days of military escalation on children PTSD, anxiety, resilience, relationship of between children mental health problems and resilience.

Methods: This was descriptive analytic study. The study sample consisted of 502 randomly selected children from 16 districts of the Gaza Strip. Age ranged from 9 to 16 years. Children were assessed by a socio demographic questionnaire, Gaza Traumatic Events Checklist, Post traumatic stress disorder scale, Children's Revised Manifest Anxiety Scale, and Resilience Scale for Adolescents.

Results: Children reported commonly traumatic events such as hearing the loud voice of Drones (98.8%), hearing shelling of the area by artillery (98.6%), hearing the sonic sounds of the jetfighters

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(98.4%), and watching mutilated bodies of Palestinians in TV (98.2%). Mean traumatic events reported by children was 7 events. Boys reported severe traumatic events than girls; traumatic events were reported in children living in a city than in village and camp.

This study showed that 35.9% of children showed full criteria of PTSD. Post traumatic stress disorder and re-experiencing symptoms were more in girls. Also, children coming from families with family income less than \$300 and living in city.

The children anxiety symptoms, 30.9% of children had anxiety disorder. No differences in anxiety disorder between boys and girls. Anxiety was more in children living in camps and family monthly income less than \$300.

Palestinians children used different ways of coping with the stress and trauma, and common resilience items were 94.6% said they were proud of their citizenship, 92.4% said they feel safe when they were with their caregivers, 91.4% said that their spiritual (religious) beliefs were a source of strength for them, and 91% said they were proud of their family background.

Total resilience in children, personal skills, peer component, and social skills, contextual components that facilitate a sense of belonging (Spiritual beliefs, culture, and educational items) were more in of girls. Total resilience and contextual components were more in children living in a camps and a village than in a city. However, there were statistically significant differences in individual factors (personal skills, peer component, and social skills) were more in children from family monthly income \$301-750 than families with monthly income of 300\$ and less. Also, traumatic events were correlated positively with anxiety and PTSD and negatively correlated with total resilience factor.

Conclusion: This study showed that the last war on Gaza had negative impact on children mental health and resilience. Children were a particularly vulnerable target group. Trauma due to war increased children psychological symptoms, including post-traumatic stress disorder and anxiety. Such psychological problems were associated with traumatic experiences, and trauma decrease children resilience.

Keywords: Anxiety; children; Gaza strip; PTSD; resilience; trauma.

1. INTRODUCTION

The Gaza Strip is a narrow elongated piece of land, bordering the Mediterranean Sea between Israel and Egypt, and covers 360 km². It has high population density. About 17% of the population lives in the north of the Gaza Strip, 51% in the middle, and 32% in the south area. There is high unemployment, socioeconomic deprivation, family overcrowding, and short life expectancy. Nearly two-thirds of the populations are refugees, with approximately 55% living in eight crowded refugee camps. The remainder lives in villages and towns. During the Palestinian-Israeli conflict the latest cumulative casualty figures reported by the Ministry of Health in Gaza were 175 killed persons (151 males; 24 females) of whom 43 (25%) were children; 16 children were less than 5 years old. The total includes 5 persons who had later died of their injuries, and 1399 persons injured, of whom 431 (34%) were children and 141 were less than 5 years old. (Earlier MoH data with gender disaggregation was based on uncorrected figures of 1404 injured (994 males; 410 females) [1].

In studies of Palestinian children in the Gaza Strip found that children experienced variety of

traumatic events including witnessing killing of relatives, demolition of homes, bombardment, and arrest of relatives was associated with post traumatic disorder, anxiety, and depression. They severely deteriorate children's sleep and cause uncontrollable fears among babies and children, causing anxiety, panic attacks, and poor concentration [2,3,4]. In another study, others found that military trauma in middle childhood and stressful life-events in early adolescence formed a risk for post traumatic stress disorder and depressive and decreased satisfaction with the quality of life in adolescence [5].

Others, in a study on the experiences of Palestinian children (aged 1–15) residing in the West Bank, witnessing traumatic events such as murder, physical abuse, destruction of property, and threats was associated with PTSD symptoms [6]. Moreover, in another study of a sample of 600 Palestinian youths (8-14 years old) in West Bank and Gaza Strip found that children exposed to a variety of political conflict and violence (73%) witnessed actual political violence and (99%) witnessed political violence through media reports. A significant predictor of post traumatic stress symptoms was exposure to

political conflict and violence. Gender and age also did not interact with exposure to political violence when predicting PTS symptoms with other types of exposure [7]. In another area of war and conflict in Asia, researcher found a high number of somatic complaints and memory problems among children (aged 10–14) exposed to war in Sri Lanka [8]. While, in study of Kuwaiti children, showed that there was an association between exposure to war-related trauma and poor subjective ratings of health and sleep quality among children aged 9 to 12 living in Kuwait [9].

Resilience refers to positive patterns of functioning during or following an adverse event. According to this definition, an individual must be functioning at an adaptive level consistent with standards appropriate for one's age and developmental level following exposure to an adversity [10]. Others have defined resilience as the capacity of individuals to successfully maintain or regain their mental health in the face of significant adversity or risk. Resilience is an interactive dynamic construct that considers protective factors and positive adaptation in adversity, rather than focusing on risk factors and psychopathology [11]. Spirituality was commonly reported to be important to resilience and adaptive in illnesses. It was postulated that belief in God or having faith helped individuals make sense of the illness and acted as a source of strength. Participants high in spirituality were reported to have better mental health and adjustment [12,13,14]. However, it should be noted that within the trauma literature resilience is also frequently defined as a lack of psychopathology (i.e., posttraumatic stress disorder, anxiety, depression) [15].

Studies that have specifically focused on the resilience of children exposed to community violence have identified social support from a child's family (parent), school, and peer group to be important in resilience from repeated violence exposure [16,17]. Family cohesion and positive coping on the part of parents also appear to lessen the negative impact of community violence [18,19]. Studies of people living in war zones highlight the significance of interdependent coping, confirming that the level of emotional upset and anxiety displayed by parents, not the war itself, is the most important factor in predicting a child's response [20]. Others found that specific aspects of social support within the children's family (e.g., perceived parental helpfulness) and school (e.g.,

teacher helpfulness) provided some level of protection against the deleterious influence of community violence exposure [21]. According to others, community resilience emerges from community-level resources that enhance residents' abilities to adapt in positive ways to risk. Social capital resources, institutional resources, and economic resources are three types of resources that contribute to community resilience. The aim of the study was to investigate the effect of traumatic events due to eight days of military escalation on children PTSD, anxiety, resilience, relationship of between children mental health problems and resilience [22].

2. METHODS

2.1 Participants

The target population consisted of 502 children ages 9 to 16 years, who were exposed to the war on the Gaza Strip on November 2012, and who lived in five localities of the Gaza Strip (north Gaza, Gaza, Middle area, Khan Younis, and Rafah area). They were 250 boys (50 %) and 250 girls (50%). Mean age of 12.57 years ($SD = 2.2$).

2.2 Study Procedure

Data collection was conducted by 10 professionals who attended day training by the principal investigator about the aim of the study, sample, and questionnaires of the study. Data collection was done from 1st January one-day 26 January 2013 which include the 502 children in the five areas. For selecting the children from each district, one street was selected in each area, and every principal was selected. In larger buildings, one flat from each floor was selected randomly. Families were included if they consisted of both parents, with one boy or one girl, aged between 9-16 years, and had been in the area for the last year. Families were approached until 502 agreed to let their children participate. Covering letter was given to each participant explaining the aim of the study and about their right not to participate in study and ask them to sign the letter. With the family member lasted for 30 minutes.

2.3 Measures

2.3.1 Socio-demographic questionnaire

The researcher prepared a questionnaire which included; name, gender, date of birth, place of

residence, number of siblings, and other demographic information.

2.3.2 Gaza traumatic events checklist

The checklist was developed to reflect the particular circumstances of the regional conflict which could not be captured by other war trauma measures and had been reported previously [2,3,4]. This checklist consisted of 18 items covering three domains of events typical of the war on Gaza: (1) hearing traumatic events (items number 1-5 include hearing about killing of relatives or friends) (2) witnessing trauma (items number 6-12, experiencing witnessing of home demolition, killing of others); and (3) personal experiences (items number 13-18, being personally the target of violence, being shot, injured, or beaten up by soldiers). The respondents rated their answer whether they had been exposed to each of these events as (0) 'no' or (1) 'yes'. A total score was estimated. In this study, the split half reliability of the scale was high ($r = .59$). The internal consistency of the scale was calculated using Chronbach's alpha was high ($\alpha = .64$).

2.3.3 UCLA PTSD index for DSM-IV: Adolescent version [23]

The items of the UCLA PTSD indices are keyed to DSM-IV criteria and can provide preliminary PTSD diagnostic information. Self-reports for children and adolescents exist, as well as a parent report of PTSD symptoms. The adolescent Version (for adolescent aged 13 years and older) contains a total of 22 questions, have also been administered in school classroom settings. A 5-point Likert scale from 0 (none of the time) to 4 (most all the time) is used to rate PTSD symptoms. Only 17 items were included in the total score because two items were not DSM-IV criteria and three items were repeated symptoms. The split-half reliability of this measure was 0.60 and the Cronbach alpha was ($\alpha = .71$).

2.3.4 The revised children's manifest anxiety scale (RCMAS) [24,25]

The Revised Children's Manifest Anxiety Scale is designed to measure symptoms of generalized anxiety in children and youth. The 37 scale items are answered yes or no. Nine items comprise a Lie scale, thus symptom severity scores range from 0–28. The clinical cutoff score is ≥ 18 . Reliability Kuder-Richardson- 20 (KR-20) has

been found to be high $=.85$. [26]. A high correlation ($r = .85$) has been found between RCMAS and other instruments measuring trait anxiety (Reynolds, 1980). In the present population, the KR-20 for the RCMAS was ($\alpha = .87$).

2.3.5 Resilience scale for adolescents [11]

The scale is a 28-item self-report scale using positively phrased. Higher scores reflect higher degree of resilience. This scale was developed using confirmatory factor analysis and has shown adequate psychometric properties (total Chronbach alpha = 0.94) and initial promising validity [11]. Results suggest that the Resilience Scale for Adolescents has three subscales reflecting the major categories of resilience. Furthermore, each subscale has its own groupings of questions that serve as indicators of the construct's major categories. The first subscale reflects an individual factor that includes personal skills (5 items), peer support (2 items), and social skills (4 items). The second subscale deals with caregiving, as reflected in physical caregiving (2 items) as well as psychological caregiving (5 items). The third subscale comprises contextual components that facilitate a sense of belonging in youth, components related to spirituality (3 items), culture (5 items), and education (2 items). The split-half reliability of this measure was 0.70 and the Cronbach alpha was ($\alpha = .83$).

2.4 Statistical Analysis

Data entry and analysis were carried out using a statistical software SPSS version 18.0 (SPSS Inc. Chicago Ill, US). Frequency and percent were used to express quantitative data of types of trauma, mental health disorder, PTSD, anxiety, and resilience. For continuous variables means and standard deviations were reported. For differences between means of two groups parametric tests were used such as an independent t-test was conducted to compare gender of children and mean of trauma, PTSD, anxiety, and resilience. While, One Way ANOVA test was used for measuring differences between more than two groups of continuous variables total traumatic events, PTSD, anxiety, resilience, and other sociodemographic variables. Spearman's correlation coefficient was used to test the association between numbers of traumatic experiences, PTSD, anxiety, and resilience. Logistic regression analysis was conducted in which PTSD/no PTSD was entered

as dependent variable and each traumatic events as independent variables. Another Multivariate regression analysis was conducted, in which each traumatic events were entered as the independent variables, and PTSD, Anxiety, Resilience entered as the dependent variable. We used an alpha level of .05 for all statistical tests.

3. RESULTS

3.1 Sociodemographic Characteristics of the Children and Adolescents

The sample consisted of 251 boys (50 %) and 251 girls (50%) (Table 1). According to the selection criteria, the age range was 9-16 years, with a mean age of 12.57 years ($SD = 2.2$). Regard place of residence, 94 of children were from north Gaza (18.9%), 174 live in Gaza area (34.7%), 84 live in Middle area (16.7%), 96 live in Khan Younis and East area (19.1%), and 54 live in Rafah area (10.8%). Regard place of residence, 262 of children personal competence, control, trust in one's instincts in urban areas (52.2%), 173 in camps (34.5%), and 67 in a rural area (13.3%). Families were of large size, as 22.1% of the participating families had 4 or less siblings, 49.8% had 5-7 siblings and 28.1% of had 8 or more siblings. Regard family monthly income, 67.1% of the families had a monthly income under \$300, 25.7% between \$301-751, 5.4% had a monthly income above \$751-1000, and 1.8% had more than \$1001.

3.2 Exposure to Traumatic Events

As shown in Table 2, the highest frequencies of reported traumatic events were hearing the loud voice of Drones' motors (98.8%), hearing shelling of the area by artillery (98.6%), hearing the sonic sounds of the jetfighters (98.4%), and watching mutilated bodies in TV (98.2%). Palestinian children reported 3-17 traumatic events with a mean= 7.5 traumatic events ($SD = 2.28$).

3.2.1 Severity of traumatic events due to war on Gaza

In order to find the severity of the traumatic experiences, total traumatic events were recorded in to mild trauma (0-5 events), moderate trauma (6-10 events) and severe trauma (above 11 events). The results showed that 6.6% reported mild traumatic events, 67.7% reported moderate traumatic events, and 25.7% reported severe traumatic events. Chi square test showed that 11.6% of boys reported severe,

and 8.4% of girls reported severe traumatic events. Boys statistically significantly reported severe traumatic events than girls ($\chi^2 = 15.23$, $df = 1$, $p = 0.001$).

Table 1. Sociodemographic information of the children (N =502)

Gender	No.	%
Male	251	50
Female	251	50
Age Mean = 12.57 ($SD = 2.2$)		
Place of residence		
North Gaza	94	18.7
Gaza	174	34.7
Middle area	84	16.7
Khan Younis	96	19.1
Rafah	54	10.8
Type of residence		
City	262	52.2
Village	67	13.3
Camp	173	34.5
No of siblings		
Four and less	111	22.1
Five to seven siblings	250	49.8
Eight and more siblings	141	28.1
Family monthly income		
Less than \$300	337	67.1
\$301-750	129	25.7
\$751-1000	27	5.4
More than \$1001	9	1.8

3.2.2 Differences in children reporting traumatic events according to other sociodemographic variables

In order to find differences in total traumatic event and other sociodemographic variables such as gender, age, place of residence, education, family monthly income an independent-samples t-test for less than two groups and One Way ANOVA for more than three groups were conducted.

Mean traumatic event reported by boys were 7.84 ($SD = 2.30$) and 7.19 reported by girls ($SD = 2.24$). There was significantly reporting traumatic experiences more in boys than in girls ($t(500) = 3.23$, $p < 0.01$).

Age of children was recorded in to two groups (9-12, and 13-16 years). Independent-samples t-test was done, mean traumatic events experienced by children age 9-12 years was 7.57 ($SD = 2.45$) and mean for children age 13-16 years as 7.46 ($SD = 2.12$). There was no significant differences in reporting traumatic experiences according children age group ($t(500) = .53$, $p < 0.01$).

Table 2. Percentage of traumatic experiences by children (N= 502)

Trauma	Yes		No	
	No.	%	No.	%
Hearing the loud voice of Drones' motors	496	98.8	6	1.2
Hearing shelling of the area by artillery	495	98.6	7	1.4
Hearing the sonic sounds of the jetfighters	494	98.4	8	1.6
Watching mutilated bodies of in TV	493	98.2	9	1.8
Witnessing the signs of shelling on the ground	398	79.3	104	20.7
Receiving threaten letters by the Israeli army through local Television or the Radio	279	55.6	223	44.4
Unable to leave you home with family members due to fears of shelling in the street	270	53.8	232	46.2
Hearing killing of a friend	175	34.9	327	65.1
Witnessing firing by tanks and heavy artillery at neighbors' homes	143	28.5	359	71.5
Receiving pamphlets from air planes to leave your home at the border and to move to the city centers	137	27.3	365	72.7
Threaten by telephoned to evacuate your home before bombardment	79	15.7	423	84.3
Witnessing assassination of people by rockets	75	14.9	427	85.1
Forced to leave you home with family members due to shelling	75	14.9	427	85.1
Witnessing shooting of a friend	65	12.9	437	87.1
Hearing killing of a close relative	50	10	452	90
Witnessing firing by tanks and heavy artillery at own home	18	3.6	484	96.4
Witnessing shooting of a close relative	18	3.6	484	96.4
Physical injury due to bombardment of your home	14	2.8	488	97.2

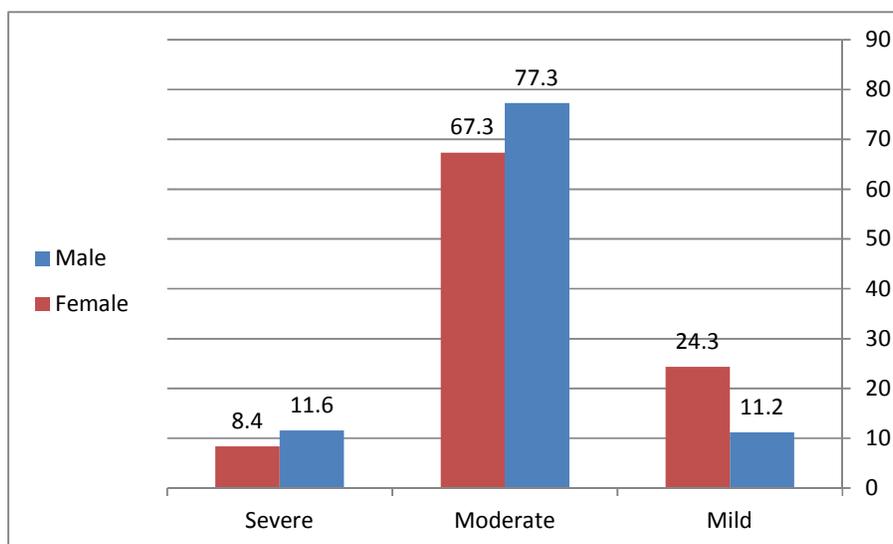


Fig. 1. Severity of traumatic events in children due to 8 days war on Gaza in children (N= 502)

One-way ANOVA was conducted in which total traumatic events was entered as dependent variable and other sociodemographic variables as independent variables. Post hoc analyses using Tukey's HSD showed that mean traumatic events for children's place of residence (city,

village, and camp) was (9.36, 7.69, and 8.63 respectively). There was significantly more experiences of traumatic events in children living in city than in village or camp, $F(2, 499) = 9.34, p = 0.01$). There were no statistically significant differences in traumatic events according to

families monthly income, $F(2,499) = 2.407, p = .59$.

3.2.3 Post traumatic distress reactions in children and adolescents

Children commonly reported post traumatic stress disorder symptoms such as 50.8% of children said that they had exaggerated startle response, 37.6% had acting or feeling as if the traumatic event were recurring, 37.6% had intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event, 36.9% doing efforts to avoid thoughts, feelings, or conversations associated with the trauma. While, the least common reactions symptoms were: 10% said that they had restricted range of affect (e.g., unable to have loving feelings), and 11% said they had feeling of detachment or estrangement from others.

3.2.3.1 Prevalence of PTSD

Using DSM-TR diagnostic criteria for PTSD of summing of (one reexperiencing, 3 avoidance, and 2 arousal symptoms), the study results showed that 31 of children (6%) showed no PTSD, 136 of children (27%) showed at least one criteria of PTSD (B or C or D), 31% showed PTSD and 36% of children showed full criteria of PTSD.

3.2.3.2 Means and standard deviations of PTSD

The results showed mean total scores of PTSD was 26.93 ($SD = 12.71$), mean reexperiencing symptoms was 9.43 ($SD = 4.72$) mean avoidance was 9.02 ($SD = 5.49$), and mean arousal was 8.47 ($SD = 4.96$). There was significantly more PTSD in girls than boys ($M = 28.20$ girls vs. 25.68 boys) ($t(500) = 2.22, p < 0.02$), and also for reexperiencing symptoms which were significantly more in girls than boys ($Mean = 10.10$ for girls vs. 8.77 for boys) ($t(500) = 3.19, p < 0.002$). Independent-samples-t test showed that there no significant differences in total PTSD according to age group of children (9-12, 13-16 years) ($M = 37.78$ vs. 26.13) ($t(500) = 1.45, p < 0.14$).

3.2.3.3 Differences in PTSD according to other sociodemographic variables such as type of residence, and family monthly income

Analysis of variance showed a main effect of place of residence on PTSD. Post hoc analyses using Tukey's HSD indicated that children living in city were higher in PTSD than for children living in village or camp, $F(2, 499) = 6.73, p = .001$. Also, total PTSD was higher in children coming from families with family monthly income less than \$300, $F(3) 499 = 6.01, p = 0.003$.

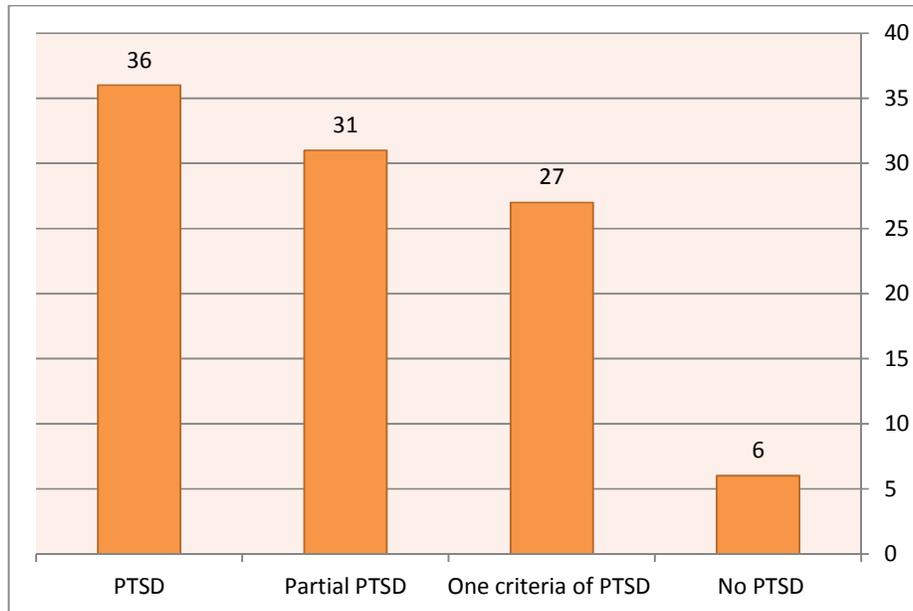


Fig. 2. Prevalence of PTSD (N = 502)

3.2.3.4 Relationship between PTSD and total trauma

Pearson correlation test was done to find the relationship between PTSD and trauma. Correlations are reported with the degrees of freedom (which is $N-2$), total traumatic events reported by children were strongly correlated with total PTSD ($r(502) = 0.19, p < 0.001$), reexperiencing ($r(502) = 0.19, p < 0.001$), avoidance ($r(502) = 0.16, p < 0.001$), and arousal symptoms ($r(502) = 0.13, p < 0.01$).

3.2.4 Prediction of PTSD by types of traumatic events

In order to test the predictive value of specific traumatic events on PTSD symptoms, PTSD (yes/no) were entered as the dependent variable in a logistic regression analysis, with the 18 types of traumatic events as the covariates. Traumatic events that significantly predicted children post-traumatic stress disorder were: forced to leave home with family members due to shelling ($\beta = 0.12, p < 0.01$), receiving pamphlets from air planes to leave home at the border and to move to the city centers ($\beta = 0.13, p < 0.01$), and receiving threaten letters by the Israeli army through local Television or Radio ($\beta = 0.10, p < 0.03$).

3.3 Anxiety Disorder Symptoms in Children

The children anxiety symptoms were rated according to Revised Child Manifest Anxiety scale. The most common anxiety symptoms reported by children were: Others seem to do things easier than I can (81.3%), other children are happier than me (71.7%), and I get nervous when things do not go the right way for me (64.3%).

3.3.1 Prevalence of anxiety disorder in children

We used cut of point of 18 and above as indicator of presence of anxiety in children. The result showed that 155 children had anxiety disorder (31%) and 347 children (69%) had no anxiety disorder and. According to gender of children, 76 of boys (15.2%) had anxiety disorder and 79 of girls (15.8%) had anxiety disorder. Chi-square test of independence was performed to examine the relation between gender and anxiety. There were no significant differences in anxiety disorder according to children gender, $\chi^2(1, N = 502) = 0.08, p < .77$.

3.3.2 Means and standard deviations of anxiety according to sociodemographic variables of children

The results showed that mean anxiety in boys was 14.24 ($SD = 6.76$) and mean anxiety in girls was 13.89 ($SD = 6.07$). No statistically significant differences in anxiety disorder according to gender of children ($t(500) = .67, p < 0.44$). The results showed no significant differences in total anxiety scores according to age group of children (9-12, 13-16) ($t(500) = 1.71, p < 0.35$). Post hoc analyses using Tukey's HSD indicated that anxiety was higher in children living in camps than in city and village ($F(2, 499) = 4.78, p = 0.01$). Anxiety was higher in children coming from families with family monthly income less than \$300 ($F(2, 499) = 5.9, p = .003$).

3.4 Resilience in Children and Adolescents

3.4.1 Frequency of resilience items

According to the children report of the most common resilience items were: 94.6% said they were proud of their citizenship 92.4% said they feel safe when they were with their caregivers, 91.4% said that their spiritual (religious) beliefs were a source of strength for them, and 91% said they were proud of their family background.

3.4.2 Means and standard deviations of resilience according to sociodemographic variables of children

3.4.2.1 Gender of children and resilience

The results showed that mean total resilience in boys was 114.69 ($SD = 14.75$) and mean resilience in girls was 117.76 ($SD = 12.94$). Mean personal skills for boys was 19.07 and 19.63 for girls, mean peer component for boys was 7.23 and 7.81 for girls, social skills for boys was 15.35 and 15.75 for girls, relationship with caregiver for boys was 29.98 and 30.20 for girls, spiritual (religious) beliefs for boys was 12.71 and 13.08 for girls, culture factor for boys was 21.59 and 21.80 for girls, and educational items for boys was 8.74 and 9.50 for girls. Girls were significantly reported more resilience than boys ($t(500) = 2.48, p < 0.01$). This was applicable for subscales of resilience, girls reported more peer component ($t(500) = 2.69, p < 0.01$), and educational factor than boys ($t(500) = 4.51, p < 0.001$).

Table 3. Means and standard deviations of resilience factors according to gender of children (N = 502)

	Gender	Mean	SD	t	p
Total resilience in children	Male	114.7	14.75	-2.48	.01
	Female	117.8	12.94		
Personal skills	Male	19.07	3.71	-1.64	.10
	Female	19.63	3.89		
Peer component	Male	7.23	2.61	-2.69	.01
	Female	7.81	2.24		
Social skills	Male	15.37	3.48	-1.26	.21
	Female	15.75	3.17		
Relationship with caregiver	Male	29.98	4.97	-.52	.60
	Female	30.20	4.45		
Spiritual (religious) beliefs	Male	12.71	2.27	-1.89	.06
	Female	13.08	2.08		
Culture factor	Male	21.59	3.49	-.74	.46
	Female	21.80	3.02		
Educational factor	Male	8.74	2.28	-4.51	.001
	Female	9.50	1.37		

3.4.3 Differences in resilience factors according to other sociodemographic variables of children

The results showed no significant differences in total resilience scores and subscales according to age group of children (9-12, 13-16) ($t(500) = .33, p < 0.37$).

Post hoc analyses using Tukey's HSD indicated that total resilience scores, $F(2,499) = 9.62, p = 0.01$, and contextual components, $F(2,499) = 10.85, p = 0.01$ was higher in children living in camps and village than in city. Also there were significant differences in individual factor toward children living in a camp than in a city, $F(2,499) = 4.69, p = 0.01$, and relationship with caregiver were more in children live in a village than in a city, $F(2,499) = 5.58, p = 0.01$. There were no significant differences in total resilience, relationship with caregiver, and contextual components according to family monthly income. However, there were statistically significant differences in individual factor toward children from family monthly income \$301-750 than families with monthly income of \$300 and less, $F(2,499) = 4.93, p = .01$. There were no significant differences in total resilience and three factors scores according to father education. There were significant differences in total resilience, $F(2,499) = 4.26, p = 0.01$, and individual factor toward mothers with university education than less than elementary education group, $F(2,499) = 6.70, p = .01$.

3.4.4 Relationships between traumatic events, security, anxiety, PTSD symptoms, and total resilience of children

Pearson correlation test was done to find the relationship between traumatic events, anxiety, PTSD symptoms, and total resilience. Correlations are reported with the degrees of freedom (which is $N-2$), Total traumatic events reported by children were negatively strongly correlated with total resilience in children ($r(502) = -0.13, p = 0.001$), peer component ($r(502) = -0.10, p = 0.001$), and relationship with caregiver ($r(502) = -0.13, p = 0.001$). However, traumatic experiences by children were positively correlated with PTSD ($r(502) = 0.19, p = 0.001$) and anxiety ($r(502) = 0.29, p = 0.001$).

Table 4. Pearson rank correlation coefficient: traumatic events, anxiety, PTSD, and resilience

	Traumatic events
Total PTSD	.19**
Total Anxiety	.29**
Total resilience in children	-.13**
Personal skills	-.09
Peer component	-.10 *
Social skills	-.06
Relationship with caregiver	-.13**
Spiritual (religious) beliefs	-.05
Culture	-.05
Education	-.05

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4. DISCUSSION

This study showed that mean traumatic events experienced by each Palestinian children was 7 events. Children living in city and being boys were more traumatized. Such findings may be explained by cultural factors because boys are more free to move outside the home and girls are kept at homes and being in city was another risk factors in which major cities were exposed more to bombardment than villages and refugee camps. Others found similar results; girls generally showed increased vulnerability for PTSD following exposure to potentially traumatic events [27]. These findings were consistent with most of the studies conducted in the area [4,28].

Our study showed that exposure to war traumatic events lead to post traumatic stress disorder in which 36% of children showed full criteria of PTSD. Such rate of PTSD was consistent with previous studies in the area [4,28, 29,5]. Also, in study of 600 adolescents aged 12-16 years from South Lebanon and Gaza Strip showed that adolescents from Gaza Strip and South Lebanon have been exposed to various types of trauma during war, namely having family members killed, injured and houses demolished. Prevalence of PTSD in Palestinian and Lebanese adolescents was 25.7% [30]. Regarding gender, females reported more traumatic events than boys. This gender differences had been reported in previous studies involving adolescent and adult population [31,32]. Our rate of PTSD is consistent with study of 920 children and adolescents from refugee minor's population 12 to 18 years old in 2002 in the Netherlands, 40% met criteria for PTSD at time one, and 16% endorsed late-onset PTSD [33]. Similarly data collected from a sample of 139 adolescents 12 to 17 years old in Gaza Strip showed that rate of posttraumatic stress disorder (PTSD) was 56.8%. Significant risk factors for PTSD were exposure, female gender, older age, and an unemployed father living in city and village had more PTSD than children live in camps, avoidance was more in children living in city and intrusion was more in children living in village [34]. These findings could be explained by exposure of children living in cities to heavy bombardment and shelling than villages and camps.

The results showed that 30.9% of Palestinian children reported anxiety disorder and no differences between boys and girls in anxiety disorder. This results is consistent with previous

study in the area in study with 409 children and young people aged 9-18 years in the Gaza Strip during continuing exposure to political trauma during the last incursion of the Gaza Strip on summer of 2006 showed that 25.4% reported anxiety disorder, girls had more anxiety than boys [35]. Also in another study [4] in study of 200 families from North Gaza and East Gaza who had exposed to continuous shelling in 2006, the sample includes 197 children and 200 parents. The results showed that 33.9% of children had anxiety disorder. Children living in camps presented higher levels of anxiety than children living in the city and villages, anxiety was more in children coming from families with family income less than \$300 and whom father and mother education was less than elementary education. This is more than previously rates of anxiety in the same area [36,37].

The study showed that Palestinian children were proud of their citizenship; they feel safe when they were with their caregivers, and their spiritual beliefs were a source of strength for them, and were proud of their ethnic background. The study showed that the highest factor for resilience was contextual components that facilitate a sense of belonging. Being a girl was more protective in which they were more resilience and had more personal skills, peer component, and social skills, spiritual beliefs, culture, and educational items. Total resilience scores and subscale contextual components were more in children living in camps and villages than in cities, individual factor was more in children living in camps than in cities and relationship with caregiver were more in children live in villages than in cities. Children with family monthly income more than \$301 had more individual factor than children from families of \$300 and less. Our results were consistent with study of 600 adolescents aged 12-16 years from South Lebanon and Gaza Strip which found that adolescents from Gaza who were under economic pressure were at the highest risk for psychological distress including PTSD, depression and anxiety [30]. Economic pressure has an impact on adolescents' mental health both directly as a source of stress and indirectly through reducing resources that may buffer the impact of traumatic events. The results showed that having high traumatic events, more anxiety symptoms, and high PTSD significantly decreased total resilience in Palestinian children. Our findings were consistent with previous findings regarding the negative impact of loss on children's functioning [38] and the impact of traumatic events on resilience [15]. Our results

consistent with study of 90 children and adolescents and their families who participated in an investigation assessing the impact of residential fires in USA on children and their families which indicated that loss and age predicted resilience in children and adolescents. Specifically, older children exhibited higher levels of resilience as compared to younger children and children who reported lower resource loss also exhibited higher levels of resilience. Gender, however, did not emerge as a predictor of resilience [39].

5. CONCLUSION AND RECOMMENDATIONS

The study showed that boys living in a city reported severe traumatic events, decrease their resilience, and affect negatively their relationship with peers and parents and increase psychological problems such as PTSD and anxiety. Due to political complexity, psychosocial programs targeting children in safe places including both boys and girls and their parents much continue for longer period to overcome the long-standing effect of trauma on children psychological wellbeing. Such programs could be carried out by local NOGs and CBOs working in civil society and funding of such programs from international community. Our findings again highlighted the need to create new programs teaching children ways of coping and overcoming stressors and being more resilient. Such programs could include non-curriculum activities, using theater and music, role play, creative activities, folklore dancing, and handcraft for girls. Local NGOs, CBOs, schools, sport clubs, and other community places funded by international donors could carry out such activities.

This study had opened ideas for new era of research which may include impact of other important factors beside trauma such as stress due to siege and blockade on children, and role of poverty and community violence in increasing children mental health problems. Also, further study of types of coping strategies used by children to overcome the impact of stress. Moreover, other protective factors such as the role of social and family support in helping children dealing with stress and trauma. And finally, impact of stress on children school performance and relation with peers.

6. STUDY LIMITATIONS

There is limitation of the study in which only we investigated the impact of trauma and not other risk factors such as poverty, large family size, community violence, parental influence, and stressors due to siege and closure.

NOTE

We used for the entire format of our paper the following style:

https://owl.english.purdue.edu/media/pdf/20090212013008_560.pdf [40]

ACKNOWLEDGMENTS

We are appreciative of the children for their cooperation during this study.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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