



## Impact of Trauma on Palestinian Children's and the Role of Coping Strategies

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### Authors' contributions

This work was carried out in collaboration between all authors. Author AAMT designed the study, supervised the data collection and did data analysis and writing, while author PV did more statistical analysis, wrote the protocol, draft of the manuscript and edited the last version of the study.

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### ABSTRACT

**Aims:** To investigate the impact of war trauma On child mental health; the mediating role of different coping strategies.

**Methods:** The sample was selected randomly from the five localities of the Gaza Strip that had been exposed to war 16 months earlier. Children completed the Gaza Traumatic Events Checklist-20 items-War on Gaza, UCLA PTSD scale, Birlerson Depression Scale, Child Revised Manifest Anxiety Scale, and Kidcope for children.

**Results:** Children reported many traumatic events (mean = 4). One third (32.5%) had partial and 12.4% had full criteria of PTSD. Children living in families with low family monthly income reported more emotional problems. There was significant association between exposure to traumatic events and developing PTSD. The rates of significant anxiety and depressive symptoms were 20.5% and

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22.3% respectively.

Girls reported significantly more depressive symptoms than boys. Children commonly used the following coping strategies: wishful thinking, problem-solving, emotional regulation, and distraction. Trauma was negatively correlated with social support and wishful thinking, and positively correlated with self-criticism. Lack of social support and wishful thinking predicted all three types of mental health problems, while social withdrawal specifically predicted depression.

**Conclusions:** Trauma can have long-standing impact on children's mental health. Community-based intervention programmes could enhance children's resilience. Parents, teachers, universal and specialist mental health practitioners have essential roles in the development and delivery of such programmes.

*Keywords: War; Gaza; children; PTSD; depression; anxiety; coping.*

## 1. INTRODUCTION

A number of studies from war zones and different cultures have reported high rates of posttraumatic stress disorder (PTSD) among children exposed to trauma. For example, in a study of Palestinian children in the Gaza Strip, 41% reported moderate to severe posttraumatic stress (PTS) reactions [1]. In addition to examining the prevalence of PTSD and other psychiatric disorders, subsequent research investigated risk factors, including the extent of exposure. In contrast to peacetime disasters, stressors during war are generally multiple, diverse, chronic, and recurrent such as the violent death of a parent, witnessing the killing of close family members, separation and displacement, terror attacks like bombardment and shelling [2,3]. In addition, Palestinian children continuously witness severe internal (familial and societal) and external violence (due to occupation).

Children emotional responses have been found to increase in line with the levels of violence encountered [4,5]. Another study with 309 Palestinian preschoolers also found that direct and indirect exposure to war trauma increased the risk of ill mental health from a young age [6]. Overall, the majority of studies conducted in the Occupied Palestinian Territories have emphasized the high rates of dysfunction and maladaptation in Palestinian children, and reported a high prevalence of common mental health problems and more severe disorders [3,7,8].

A review of studies on PTSD prevalence in youth exposed to a variety of traumas found a wide range of prevalence rates depending on the type of trauma exposure and measure used [9]. The highest rates of PTSD were found in studies of children and adolescents exposed to war or

political violence and repression. In such a study in the Gaza Strip areas exposed to the war of 23 days, among 374 children aged 6-17 years, using self-report questionnaires, 29.9% suffered from moderate PTS reactions, and 61.5% from severe to very severe PTS reactions [10]. In a similar study with children six months after the Gaza war, 39.3% fulfilled partial and 9.8% full DSM-IV criteria for PTSD [11].

Coping is defined as "constantly changing cognitive and behavioural efforts to manage specific external or internal demands that are appraised as taxing or exceeding the resources to the person" [12]. There is no unifying theory regarding the underlying elements of child and adolescent coping, although three dimensions are most commonly used to categorize coping strategies: (a) problem-focused and emotion-focused coping, (b) primary and secondary control coping, and (c) engagement and disengagement coping (also referred to as approach versus avoidance coping) [13].

To date, much of the research with children and adolescents has been based on the framework by Folkman and Lazarus (albeit initially developed for adults), which emphasized the context in which the coping actions occur, the attempt rather than the outcome, and the fact that coping is a process that changes over time, as the person and the environment are continuously in a dynamic, mutually influential relationship [14,15,16]. This is often referred to as the transactional model of coping.

Coping can affect children's emotional well-being independently of their prior mental health status. It is equally likely that children experiencing poor mental health use different and fewer effective strategies than those with adaptive mental health. In a study with children of depressed parents, negative cognitions were associated

with three types of coping, i.e. primary control, secondary control, and disengagement. Furthermore, coping style and negative cognitions made independent contributions to depressive symptoms [17,18].

Young people in the Gaza Strip commonly used coping strategies such as self-reliance and optimism; engaging in activities that were demanding of themselves and within their control such as getting their bodies in shape and getting better grades; and exploring ways to figure out how to deal with problems or tensions on their own. Avoidance behaviour by drinking alcohol, or using illicit drugs were the least used coping strategies [19]. Maltreated male adolescents, also in the Gaza Strip, were found to rely on emotional and problem-solving coping strategies [20]. Similarly, in another study of 250 Palestinian children who had lost their fathers due to war conflict in the Gaza Strip, significant differences were found on mental disengagement, focus on and venting of emotion, use of instrumental social support, active coping, religious coping, restraint, and planning according to trauma levels all of which were mainly used by children exposed to severe traumatic events [21].

In research with other ethnic groups such as African American high school students, coping styles range from “getting through,” which included both an acceptance of community conditions; “getting along,” which included self-defense techniques; “getting away,” which included avoidance coping strategies; and “getting back,” which consisted of confrontational coping strategies. Boys are more likely to report confrontational coping styles than girls, who instead utilize more avoidance approaches [22]. Others found similar ways of coping with terrorism attacks. Moscardino et al. 2014, in study of 60 adolescents (aged 14–18 years) who survived the 2004 terrorist attack against a Russian school in Beslan, found that self-blame was related to increased risk of PTSD, which provided further evidence for the association between emotion-focused coping strategies and posttraumatic symptomatology [23].

Overall, coping strategies have been found to mediate and/or moderate the relationship between exposure to stressors and mental health in children and adolescent [24]. The aims of this study were to investigate: 1) the types and severity of traumatic events after 16 months of the war on Gaza on children; 2) the prevalence

of PTSD, anxiety, and depressive symptoms; 3) the types of coping strategies used by children; and 4) the mechanisms between trauma, coping strategies and psychopathology.

## 2. METHODS

### 2.1 Setting and Sample

The Gaza Strip is a narrow elongated piece of land, bordering the Mediterranean Sea between Israel and Egypt, which covers 360 km<sup>2</sup>. 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 are high unemployment, socioeconomic deprivation, family overcrowding, and short life expectancy. Nearly two-thirds of the population are refugees, with approximately 55% living in eight crowded refugee camps. The remainder live in villages and towns [25].

The target population consisted of 462 children of 7 to 18 years, who were exposed to the war on the Gaza Strip between December 2008 and January 2009, and who lived in five localities of the Gaza Strip (North, Gaza, Middle, Khan Younis, Rafah) . The sample was selected randomly according to prepared list of number of boys and girls from each of the five areas. Of the total children of 462 who were contacted, 449 agreed to participate in the study, following informed consent from their parents, with a response rate of 97%. This high response rate was due to the type of Palestinian society in the Gaza with limited movements from their homes and families are staying for the same place for very long period and also insistence of the data collectors to do the interview even to visit the family more than 2-3 times.

The data collection was carried out by eight trained psychologists and social workers, under the supervision of the first author. They were trained for six hours in data collection and interviewing techniques. The data was collected during 2010. Children completed self-administered questionnaires at home with assistance from the researchers. The completion of the self-administrative measures took at least one hour for each child. Sociodemographic information was collected from the parents, while measures for exposure to traumatic events, PTSD, depression, anxiety, and coping strategies were completed by the children.

## 2.2 Measures

### **2.2.1 Gaza traumatic events checklist [5]**

The checklist was developed to reflect the particular circumstances of the regional conflict, which could not be captured by other war trauma measures, and has been reported previously [1,2]. This consists of 17 items covering three domains of events typical of the war on Gaza: (1) witnessing personally acts of violence (e.g., killing of relatives, home demolition, bombardment, or injuries); (2) experiencing loss or injury of family and other close persons; and (3) being personally the target of violence (e.g., being shot, injured, or beaten up by soldiers). The respondents rated whether they had been exposed to each of these events as (0) 'no' or (1) 'yes'. A total score was estimated. The Cronbach alpha for the Gaza Trauma Events Scale was 0.80 and the split half was 0.75.

### **2.2.2 Revised children's manifest anxiety scale (RCMAS) [26]**

The RCMAS is a standardized 37-item self-report questionnaire for children of 6-19 years of age. It measures anxiety-related symptoms ('yes/no' answers) on 28 anxiety and 9 lie items. This instrument has been previously used by the authors in the Gaza Strip, including in a total population study, where 21.5% of children scored above the cut-off score for anxiety disorders [27].

In the current study, the internal consistency of the scale, calculated using the Cronbach's alpha, was high ( $\alpha=0.86$ ), as was its split half reliability ( $r=0.82$ ).

### **2.2.3 Depression self-rating scale for children (DSRC) [28]**

The Depression Self Rating Scale (DSRC) is an 18-item self-report questionnaire in which the child is asked to rate his/her own situation during the last week on a 3-point scale. Scores of 2, 1 or 0, respectively, in the direction of disturbance, refer to 'most of the time', 'sometimes' or 'never'. The DSRC includes 18 items. The Cronbach's alpha was  $\alpha=0.63$  and the split half reliability was  $r=0.61$ .

### **2.2.4 UCLA PTSD index for DSM IV - adolescent version [29]**

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 parent reports. The adolescent Version for aged 13 years and above includes 22 questions. 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 did not constitute DSM-IV criteria and three items were repeated symptoms were used [29]. The original English version of this scale was adapted to the Palestinian context (Cronbach  $\alpha$  for Arabic Palestinian version was 0.89) [30].

Reaction Index was highly satisfactory (Cronbach's alpha = 0.90), with a split half of 0.86.

### **2.2.5 Kidcope-young children [31]**

The Kidcope is a brief self-report measure of children's and adolescent's use of coping strategies [31]. The 15-item is designed for children between the ages of 7 and 18 years. The framework underpinning its development is based on the theory that coping is a process of changes in cognitive and behavioral strategies rather than a stable personality trait. The Kidcope allows children to identify the problem they consider the most stressful in their lives, and to assess ten coping strategies (distraction, social withdrawal, cognitive restructuring, self-criticism, blaming others, problem solving, emotional regulation, wishful thinking, social support, and resignation) related to this specific problem.

The Kidcope was administered in relation to the traumatic events of the war on Gaza, and was scored for positive coping style (the sum of responses to the cognitive restructuring, problem solving, emotional regulation, and social support subscales) and negative coping style (the sum of responses to the distraction, withdrawal, criticizing self, blaming others, wishful thinking, and resignation subscales). Each item/coping strategy is scored as 0 ('no') or 1 ('yes'). Earlier research established test-retest reliability coefficients for short intervals (3-7 days) ranging from 0.41 to 0.83 [32].

## 2.3 Statistical Analysis

The analysis was conducted on the SPSS for Windows (version 20). Questionnaire data was normally distributed, for this reason independent t-test was used to investigate differences between two groups. Associations between

continuous variables were measured by the Pearson's correlation coefficient test. One-way ANOVA post hoc Tukey was used to investigate differences between more than two groups. To test the fourth aim, a multivariate regression analysis was conducted, in which trauma scores were entered as the independent variable, each psychopathology score (depression, anxiety, PTSD) entered as the dependent variable, and coping strategies as covariates.

### 3. RESULTS

#### 3.1 Sociodemographic Profile

As shown in table one, regard to the area of residence, 34.3% of children lived in Gaza area, 19.2% in Khan Younis, 18.3% in the middle area, 16.3% in the northern Gaza Strip, and 12% in the Rafah area. Most of them lived in cities (64.2%), 25.5% in refugee camps and 10.3% in villages. According to family monthly income, 73.4% of families had less than \$300, 22.6% had \$301-625, and only 4% had a monthly income of more than \$626-750. In regards to employment status, 46.5% of children's fathers were unemployed, 8.1% Unemployed and received benefit, and 13.6% were government employees, 7.1% were simple workers, 6% were skilled workers, 13.6% were governmental employee 3.5% were United Nations Relief and Works Agency for Palestine Refugees (UNRWA) employee, 2.3% were given unemployment benefits, 3.2% were farmers, and 9.7% were working in other jobs (Table 1).

#### 3.2 Exposure to Traumatic Events

As shown in table two, the most commonly reported traumatic events experienced by children during the last war were: watching mutilated bodies and injured Palestinians on television (90.4%); deprivation from water or electricity during detention at home (44.6%); and forced to leave their home during the war (33.5%) (Table 2).

Overall, children reported a range of 0 to 17 traumatic events, with a mean number of 3.59 (SD=2.92). When these were grouped into mild (0-5 events), moderate (6-10) and severe (11 and above), 80.6% of children reported mild level of trauma, 16% moderate level, and 3.3% reported a severe level of trauma exposure. There were no significant differences between males and females in reporting traumatic events ( $t=-0.88, p=0.37$ ). When children were grouped in the 7-11, 12-15 and 16-18 years age groups,

there were no differences on reporting traumatic events ( $F=0.33, p<0.71$ ). Furthermore, there were no differences in exposure to trauma according to place of residence or family monthly income.

**Table 1. Sociodemographic characteristics (N = 439)**

Items	No.	%
<b>Gender</b>		
Boys	233	51.9
Girls	216	48.1
<b>Area of residence</b>		
North Gaza	73	16.3
Gaza	154	34.3
Middle area	82	18.3
Khan Younis	86	19.2
Rafah	54	12
<b>Type of residence</b>		
City	274	64.2
Village	44	10.3
Camp	109	25.5
<b>Monthly family income</b>		
Less than \$300	292	73.4
\$301-625	90	22.6
\$626-750	16	4
<b>Father job</b>		
Unemployed	202	46.5
Unemployed and received benefit	35	8.1
Simple worker	31	7.1
Skilled worker	26	6
Governmental employee	59	13.6
United Nations Relief and Works Agency for Palestine Refugees (UNRWA) employee	15	3.5
Unemployment benefit	10	2.3
Farmer	14	3.2
Other	42	9.7
<b>Mothers job</b>		
Housewives	422	94.0
Simple worker	6	1.3
Governmental employee	10	2.2
Other	11	2.4

#### 3.3 Children's Post-traumatic Stress Reactions

Approximately one quarter (24.9%) of children did not experience any PTSD symptoms, 30.2% reported at least one criterion (B or C or D), 23.5% reported partial PTSD (B and C, C and D, or B and D), and 12.4% of children reported full criteria of PTSD. The most common post traumatic symptoms were: 43.4% reported that when something reminded them of what

happened during the war, they became very upset, afraid or sad; 31.5% were afraid that the event would happen again; 30.4% felt jumpy or easily startled, like when they heard a loud noise; and 30% tried to stay away from people, places, or objects that reminded them of what happened.

Post hoc test using Tukey showed that children aged 7-11 years reported more PTSD symptoms than the older age groups ( $F=4.28$ ,  $p=0.01$ ). Children from families with family income of less than \$300 reported more PTSD symptoms ( $F=6.01$ ,  $p=0.003$ ). , as were children living in cites ( $F=4.05$ ,  $p =0.01$ ). Using the Pearson correlation test, there were significant association between total traumatic events reported by children and total PTSD ( $r=0.43$ ,  $p = 0.01$ ), intrusion ( $r=0.29$ ,  $p = 0.01$ ), avoidance ( $r=0.41$ ,  $p = 0.01$ ), and hyperarousal scores ( $r =0.45$ ,  $p = 0.01$ ).

In a multivariate regression model, each traumatic event was entered as an independent variable, with total PTSD scores as the dependent variable. Five traumatic events were significantly associated with total PTSD symptoms: deprivation of going to the toilet and leaving the room at home because of firing and shelling in the area: ( $B=0.40$ ,  $p=0.001$ ); loss of a friend or relative: ( $B=0.25$ ,  $p=0.001$ ); destruction of personal belongings and witnessing firing by tanks and heavy

artillery at own home ( $B=0.13$ ,  $p=0.004$ ); being threatened of death by being used as a human shield by the army ( $B= 0.12$ ,  $p=0.006$ ); and shot by bullets, rockets, or bombs ( $B=0.12$ ,  $p=0.006$ ).

### 3.4 Anxiety Symptoms

Adopting, previously established cut-off scores, 89 children (20.5%) reported anxiety problems of clinical significance. There were no statistically significant differences according to gender ( $t=1.91$ ,  $p <0.13$ ) or age ( $t=1.28$ ,  $p <0.27$ ). Children coming from families with family income of less than \$300 reported more anxiety symptoms. ( $F = 6.81$ ,  $p =0.001$ ). Using the Pearson correlation test, there was a significant association between total traumatic events reported by children and total anxiety scores ( $r=0.39$ ,  $p=0.001$ ).

In a multivariate regression with each traumatic event entered as an independent variable, and total anxiety scores as the dependent variable, four traumatic events were significantly associated with total anxiety symptoms deprived from water or electricity during detention at home ( $B=0.37$ ,  $p=0.001$ ); being detained at home during the war ( $B= 0.10$ .  $p=0.04$ ); forced to leave your home during the war ( $B=0.10$ ,  $p=0.03$ ); and witnessing firing by tanks and heavy artillery at own home ( $B=0.09$ ,  $p=0.04$ ).

**Table 2. Type of traumatic experiences**

Traumatic events	Yes	No
Watching mutilated bodies in TV	90.4	9.6
Deprivation from water or electricity during detention at home	44.6	55.4
Forced to leave your home during the war	33.5	66.5
Witnessing demolition of neighbours homes	29.8	70.2
Witnessing firing by tanks and heavy artillery at neighbours homes	26.6	73.4
Being detained at home during the war	25.3	74.7
Threaten by shooting	22.6	77.4
Witnessing shooting of a friend	14.3	85.7
Destroying of your personal belongings during incursion	13.7	86.3
Witnessing killing of a friend	13.6	86.4
Witnessing firing by tanks and heavy artillery at own home	10.1	89.9
Shooting by bullets, rocket, or bombs	8.3	91.7
Witnessing killing of a close relative	7.6	92.4
Beating and humiliation by the army	6.3	93.7
Exposure to burn by bombs and phosphorous bombs	5.4	94.6
Threaten by shooting	4.1	95.9
Being exposed to danger by used as human shield by the Isralei army	4.1	95.9

### 3.5 Depressive Symptoms

Overall, 100 children (22.3%) reported depressive symptoms above the cut-off score. Girls reported significantly higher scores ( $t=15.9$ ,  $df=1$ ,  $p<0.001$ ), as well as children coming from families with family income lower than \$300 ( $F=3.58$ ,  $p=0.01$ ). Using the Pearson correlation test, there was a significant association between total traumatic events and total depression scores ( $r=0.34$ ,  $p=0.001$ ).

In a multivariate regression with each traumatic event entered as an independent variable, and total depression scores as the dependent variable, four traumatic events were significantly associated with total depression symptoms: deprived of going to the toilet and leaving the room because of firing and shelling ( $B=0.30$ ,  $p=0.001$ ); witnessed shooting of a relative ( $B= -0.17$ ,  $p=0.001$ ); watched mutilated bodies on TV screen ( $B=-0.15$ ,  $p=0.004$ ); and detained at home during incursion: ( $B=0.15$ ,  $p=0.001$ ).

### 3.6 Coping Strategies

As shown in table three, the most commonly used coping strategies in the face of war stressors and trauma were: wishful thinking (96.2%), problem solving (96.2%), emotional regulation (95.3%), and distraction (93.5%). The least commonly reported coping strategies, were resignation (27.5%) and self-criticism (50.8%) (Table 3). Chi square test was conducted to investigate gender differences in relation to coping strategies. Only two coping strategies were significantly different, i.e. cognitive restructuring was reported less by girls than boys, 32.8% vs. 40.2% respectively ( $\chi^2=4.7$ ,  $df=1$ ,  $p<0.02$ ); and blaming others was more common in girls than boys, 36% vs. 34.2% respectively ( $\chi^2=3.6$ ,  $df=1$ ,  $p<0.03$ ).

### 3.7 Coping Strategies as Mediating Factors between Trauma and Child Psychopathology

Three series of multivariate linear logistic regression analyses were performed to test the hypothesis of the mediating effect of coping strategies in children's psychological reactions to traumatic events. Total traumatic events were entered as an independent variable; PTSD, total anxiety and depression scores as the dependent variable in each model; and the Kidcope subscales as the covariant. Social withdrawal was associated with depression ( $F = 5.57$ ,  $p =$

0.02); wishful thinking was associated with depression ( $F = 5.31$ ,  $p = 0.02$ ), anxiety ( $F = 6.62$ ,  $p = 0.01$ ) and PTSD ( $F = 19.13$ ,  $p = 0.001$ ); and lack of social support was associated with depression ( $F = 28.39$ ,  $p = 0.001$ ), anxiety ( $F = 8.59$ ,  $p = 0.001$ ), and PTSD ( $F = 6.65$ ,  $p = 0.01$ ).

**Table 3. Coping strategies used by traumatized children**

Coping strategies	Yes		No	
	No.	%	No.	%
Wishful thinking	418	93.5	29	6.5
Problem-solving	403	90.0	45	10.0
Emotional regulation	123	27.5	325	72.5
Distraction	393	87.9	54	12.1
Social support	428	96.2	17	3.8
Social withdrawal	426	95.3	21	4.7
Cognitive restructuring	428	96.2	17	3.8
Blaming others	327	73.0	121	27.0
Self-criticism	314	70.2	133	29.8
Resignation	227	50.8	220	49.2

## 4. DISCUSSION

This study investigated the types and severity of traumatic events after 16 months of war on Gaza on children; the prevalence of PTSD, anxiety, and depressive symptoms; to types of coping strategies used by children; and the mediating effect of coping strategies between trauma and child psychopathology. The results showed that, even such a long period after the conflict, children continued to report many traumatic events. The explanation of the continuation of reporting of traumatic could be due to the ongoing conflict, stressors and threats of a new war on Gaza. Severity of trauma exposure was significantly associated with scores total PTSD an all subscales scores. Our findings were consistent with those of the International Society for the Traumatic Stress Studies [33] i.e. that individuals who have already experienced trauma (survivors of war, immigrants, refugees, or those who have lived through periods of unemployment or discrimination) are more vulnerable to severe stress reactions following a traumatic event. These individuals may be at greater risk for mental-health problems, including depression, anxiety, and PTSD.

More specifically, 12.4% of children reported full criteria of PTSD, 20.5% suffered from anxiety problems, and 22.3% from depression

of sufficient severity to indicate the need for clinical assessment and possibly treatment. The PTSD rates were lowered in this study than those detected among adolescents injured during Al-Aqsa intifada and who sustained permanent disability [34]. They were more consistent with a previous study of children in the Gaza Strip, [35], although these rates subsequently increased when children exposed to continuous shelling (33.9%). Depression rates were high, although even higher prevalence was previously established during the conflict [33].

The most commonly used coping strategies were: wishful thinking problem solving, emotional regulation, and distraction. This finding was consistent with that of a multi-site study of 166 adolescents infected with HIV in three major US cities, which showed that passive emotional regulation (80%) was rated by youth as both the most frequently used and most helpful strategy. Blaming others was the least frequently used strategy and was perceived as among the least helpful [36]. In a study of African American high school students, collaborative religious coping protected against suicidal ideation, whereas self-directed coping (i.e. relying on oneself to manage a problem) acted as a risk factor [37].

Trauma exposure was negatively correlated with social support, wishful thinking; and was positively correlated with self-criticism. This could be explained by postulating that family and community support is disrupted because of the ongoing conflict. Children living in war zones witness a variety of traumatic events and share daily suffering with family members, which can lead to less wishful thinking and self-criticism. These mechanisms may underpin our findings. These are consistent with previous research, for example, Berman and colleagues, in a multiethnic youth sample, found that negative coping (e.g., criticizing, blaming others, wishful thinking) was related to PTSD symptoms [38]. They were also consistent with an earlier study in the Gaza Strip [39], which found that negative coping was significantly associated with PTSD, depression and anxiety; while positive coping was strategies were used by people with depression and anxiety, but not by those suffering from PTSD. Cognitive reframing, which is conceptually similar to avoidance of reminders of trauma and numbing feelings, may prospectively predict more PTSD symptoms because denying the severity of a problem and trying not to think about it may lead to more

recurrent and intrusive recollections of the trauma. Living in areas with other stressors such as siege and threat of war are additional maintain factors of PTSD.

The relationship, however, may also be reciprocal, in that higher levels of coping can have the deleterious effect of increasing distress. Our findings were consistent with a transcultural study of adolescents from four countries, which found that both Palestinian and Colombian youth were noted to be more likely to seek to belong, focus on the positives, engage in social actions, problem-solving, and seek spiritual support, than were German and Australian adolescents. Australian adolescents predominantly used non-productive strategies such as tension reduction, self-blame, ignoring, keeping to self and, most noticeably, worrying and wishful thinking [40]. Adolescents who survived the school terrorist attack in Beslan, Russia and who reported PTSD symptoms were more likely to blame themselves, thus providing further evidence for the association between emotion-focused coping strategies and posttraumatic symptomatology following terrorism<sup>41</sup>. Similar patterns have been reported following road traffic accidents [42].

This study had certainly limitations. Children's recollections over 16 months of war may have been affected by previous and emerging traumatic experiences and stressors. These reports were not corroborated with parents and teachers. Coping was assessed by a brief screening measure. As suggested by the scale's authors [32], using a brief measure may limit our ability to fully understand the adaptive and/or maladaptive nature of coping strategies and how these are applied by children. The way in which social withdrawal (an avoidance strategy) is assessed by this measure may overlap with the assessment of post traumatic stress, which brings to question the nature of this relationship.

## 5. CONCLUSION

This study found that, 16 months after war exposure, children continued to experience substantial trauma, and to suffer from associated mental health problems such as depression, anxiety, and PTSD. Children tried to cope with such reactions by using different strategies, mainly trying to feel better by spending time with family, grown-ups or friends; trying to sort out daily problems; and sharing with others. These findings highlight the need for community-based interventions to improve children mental health.

These could apply in schools and other community centers by psychologists and psychiatrists, or trained specialists. Parent training in early detection of child mental health problems and their management should be a key objective. In addition, community programmes should enhance children's resilience by helping them build adaptive individual and social strategies.

## CONSENT

All authors declare that 'written informed consent was obtained from the patient (or other approved parties) for publication of this report.

## ETHICAL APPROVAL

All authors hereby declare that all the research proposal and scales had been examined and approved by the appropriate Palestinian ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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