

# Emotional problems in Palestinian children living in a war zone: a cross-sectional study

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## Summary

**Background** Children living in war zones are at high risk of developing post-traumatic stress and other emotional disorders, but little is known about the effect of traumatic events during war. We aimed to assess the nature and severity of emotional problems in Palestinian children whose homes had been bombed and demolished during the crisis in Palestine, compared with children living in other parts of the Gaza strip.

**Methods** 91 children exposed to home bombardment and demolition during Al Aqsa Intifada and 89 controls who had been exposed to other types of traumatic events related to political violence completed self-report measures of post-traumatic stress, anxiety, and fears.

**Findings** Significantly more children exposed to bombardment and home demolition reported symptoms of post-traumatic stress ( $p=0.0008$ ) and fear ( $p=0.002$ ) than controls. 54 (59%) of 91 exposed children and 22 (25%) of 89 controls reported post-traumatic stress reactions of clinical importance. Exposure to bombardment was the strongest socioeconomic predictor of post-traumatic stress reactions (odds ratio 0.25 [95% CI 0.12–0.53],  $p=0.0008$ ). By contrast, children exposed to other events, mainly through the media and adults, reported more anticipatory anxiety and cognitive expressions of distress ( $p=0.001$ ) than children who were directly exposed.

**Interpretation** Children living in war zones can express acute distress from various traumatic events through emotional problems that are not usually recognised. Health professionals and other agencies coming in contact with children who have been affected by war and political violence need to be trained in detection and treatment of such presentations.

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## Introduction

The effect of war on children's mental health is well established. Investigators, mainly from the Middle East and the former Yugoslavia, have recorded high rates of post-traumatic stress disorders and other mental health problems and disorders. For example, after the Gulf war, high rates of post-traumatic stress disorders were recorded in Kuwaiti and Kurdish children.<sup>1–3</sup> These rates were especially prominent if children had been displaced from their community, such as in the conflicts in Croatia<sup>4</sup> and Bosnia.<sup>5–7</sup>

Similar findings have arisen from research with families exposed to civil war or other forms of political violence, for example in Burma<sup>8</sup> and south Sudan.<sup>9</sup> Because many investigators assessed children when they were refugees, the direct effects of war trauma were difficult to distinguish from the subsequent longstanding effect of socioeconomic adversities.

In a previous study,<sup>10</sup> we investigated the effect of longstanding armed conflict (Intifada, between 1987 and the Oslo peace treaty in 1993) on Palestinian children. Many (41%) reported moderate to severe post-traumatic stress reactions and high rates of anxiety and behavioural problems (27%). Baker<sup>11</sup> also established a high frequency of problems such as fears leaving home (28%), fears of soldiers (47%), and nightmares (7%), during the same period of political and military violence. These rates compare with overall prevalence of 10–15% for emotional and behavioural disorders in children in the general population, which can increase up to 20% in regions of socioeconomic adversity.<sup>12,13</sup> As the peace process was consolidated, and despite the lack of intervention, children's reactions from post-traumatic stress disorders had decreased to 10% at 1 year of follow-up. However, many children (21% as rated by parents and 32% as rated by teachers) still presented with other emotional and behavioural problems, which were predicted by the number of violent events experienced in earlier life.<sup>14</sup>

In September, 2000, the Al Aqsa Intifada started and continues today. Children and families have been exposed to various traumatic events, ranging from hearing of killing, to bombardment by helicopters in the entire Gaza strip. We aimed to investigate the nature of post-traumatic reactions, anxiety, and fears in children exposed to bombardment during the conflict, by comparison with a group of children not directly exposed to such traumatic events.

## Methods

### Setting and patients

Since the start of the Al Aqsa Intifada, children have been exposed to various traumatic events, often reported by media across the world. Particular events have been bombardment and home demolition. During the 2-month period of data collection (January and February, 2001), 333 homes were demolished and families were evacuated

into tents or flats.<sup>15</sup> Highly exposed regions included the borders of the Gaza strip, Rafah border (Salah El Dine gate), Khan Younis (El Toufah area), and Dear El Balah (Kefar Daroum settlements area).

We selected 100 children aged 9–18 years from families who lived in exposed regions, whose house had been bombarded and demolished. These families constituted the target population. Consecutive family names were obtained from the Rafah Municipality. We could not contact nine families living in exposed regions because of difficulty in accessing sections of the Rafah and Khan Younis regions because they were isolated from other regions by blockades, and because of the risks involved for the research team (eg, shooting). Both these regions are refugee camps and thus, refugee children may have been under-represented in the sample, although other refugee camps were included such as El Nusirate and Maghazi camps in the Gaza region, and most refugee camps in Rafah and Khan Younis that could be accessed by the researchers. All remaining 91 families agreed to participate. The local research ethics committee approved the study.

We selected a control group of 91 families, matched for age (9–18 years), from families living in regions of the Gaza Strip that had not been directly bombarded but who may have been exposed to other traumatic events such as witnessing bombardment by helicopters, seeing mutilated bodies on television, and hearing about the conflict in the media. Controls were also chosen as consecutive names from the Municipality register. Two non-exposed families refused to participate, leaving a control group of 89 families.

One child from each family was selected. We grouped families according to the number of children, and selected a target child from every family group by stratification of their birth order. Thus, consecutive families with three children from the register were selected as follows: in the first family the youngest child was selected, in the next family the middle child was selected, in the third family the oldest child, in the fourth family the youngest child again, and so on. Written informed consent was obtained from families. All children (exposed and non-exposed) were interviewed at home or in the homes of relatives or neighbours in whose homes they were living because their own houses had been demolished.

#### Measures and procedures

We obtained information from parents about their employment and educational status. All children were assessed with the child post-traumatic stress reaction index (CPTSD-RI),<sup>16</sup> the revised children's manifest anxiety scale (RCMAS),<sup>17</sup> and the children fears checklist.<sup>18</sup> The CPTSD-RI is a 20-item self-report scale designed to score symptoms of post-traumatic stress reactions of children aged 6–16 years. The index includes three subscales, intrusion (seven items), avoidance (five items), and arousal (five items), plus three additional items. Inter-rater reliability for this instrument when administered by a clinician has been reported to be high, with a Cohen  $\kappa$  of 0.87 for agreement between items.<sup>19</sup> Items are rated on a 0–4 scale: mild (total score of 12–24), moderate (25–39), severe (40–59), and very severe (>60), which refer to the likelihood of post-traumatic stress disorders.<sup>20</sup> The CPTSD-RI has been translated into Arabic and validated for this culture.<sup>10,14</sup> In this study, the split half reliability of the scale was high ( $r=0.79$ ). Chronbach's  $\alpha$  was also high (0.71) for the intrusion subscale, but low for the other two subscales (arousal 0.56 and avoidance 0.36).

The RCMAS<sup>17</sup> is a standard 37-item self-report questionnaire for children aged 6–19 years. The questionnaire (yes or no answers) measures symptoms of anxiety in 28 anxiety items and nine lie items. A score of 18 or more has been found to indicate presence of anxiety disorder.<sup>21</sup> This questionnaire has been used in a total population study in the Gaza strip, in which 22% of children scored above the cut-off score for anxiety disorders.<sup>22</sup> The internal consistency of the scale, calculated using Chronbach's  $\alpha$  was also high (0.86).

The children fears checklist<sup>18</sup> was developed by El Taib. The child rates 20 items on different fears as yes or no. The total score is 20 in all items. This checklist was tested in Egypt for 2000 children aged 9–12 years. Test-retest reliability was high ( $r=0.91$ ), with internal consistency 0.78. The validity of the checklist was externally assessed by a panel of experts, who agreed on 90% of the items. In this checklist, fears range from specific fears (eg, of the dark), to more complicated fears and reactions (eg, seeing people on the walls). The split half-reliability of the scale was  $r=0.61$ , and the internal consistency, calculated with Chronbach's  $\alpha$ , was 0.66 (lower than that in our original study). This difference may be related to different populations—a stable general population in the original study, and a high-risk population in this study, who may have rated differently checklist items that ranged from ordinary fears to fears related to war (eg, fear of soldiers).

#### Statistical analysis

We used descriptive statistics to present the characteristics of the sample. To analyse differences between the groups, we used the  $\chi^2$  test for categorical variables and the Mann-Whitney U test for continuous variables that were not normally distributed. We did multivariate logistic regression analyses to investigate the association between independent (exposure to bombardment and sociodemographic variables) and dependent variables (post-traumatic stress disorders or anxiety).

#### Results

180 children participated in the study: 91 (51%) who had been exposed to bombardment and home demolition, and 89 (49%) controls who had not. Table 1 shows the main demographic and socioeconomic variables for the two groups. The non-exposed group was much younger than the exposed group ( $p=0.033$ ; table 1). We also recorded significant differences in paternal and maternal education status (higher education in parents of the non-exposed group than in the exposed group: fathers  $p=0.0008$ ; mothers  $p=0.021$ ); and more unemployed fathers and skilled workers in the exposed group than in controls ( $p=0.040$ ). However, most fathers were effectively unemployed during the conflict.

We recorded severe to very severe post-traumatic stress disorder reactions (score >40) in more children who had lost their homes due to bombardment than in controls (table 2). Children exposed to bombardment and home demolition also had significantly higher post-traumatic stress disorder scores, and higher CPTSD-RI subscales of intrusion, avoidance, and arousal symptoms (table 2).

The most frequently reported items of the CPTSD-RI (post-traumatic stress symptoms occurring much or most of the time) in exposed children were: identifies event as extremely stressful (60 of 91, 66%), difficulty in concentrating (53, 58%), sleep disturbance (52, 57%), and avoidance of reminders (47, 52%).

In logistic-regression analysis, we entered presence of post-traumatic stress disorder as the dependent variable (present or not), with sociodemographic variables and

	Exposed group (n=91)	Non-exposed group (n=89)
<b>Age (mean [range], years)</b>	14.3 (9–18)	13.4 (9–18)
<b>Sex</b>		
Boys	43 (47%)	48 (54%)
Girls	48 (53%)	41 (46%)
<b>Region of residence</b>		
Middle region	21 (23%)	50 (56%)
Khan Younis	11 (12%)	1 (1%)
Rafah	59 (65%)	28 (31%)
Gaza	0	10 (11%)
<b>Father's employment status</b>		
Unemployed	10 (11%)	4 (4%)
Unskilled worker	17 (19%)	28 (31%)
Skilled worker	36 (40%)	22 (25%)
Civil employee	27 (30%)	32 (36%)
Merchant	1 (1%)	3 (3%)
<b>Father's education status</b>		
Illiterate	42 (46%)	17 (19%)
Elementary school	17 (19%)	18 (20%)
Primary school	7 (8%)	22 (25%)
Secondary school	14 (15%)	24 (27%)
Diploma	9 (10%)	3 (3%)
University	2 (2%)	5 (6%)
<b>Mother's employment status</b>		
Housewife	91 (100%)	83 (93%)
Employee	0	6 (7%)
<b>Mother's education status</b>		
Illiterate	6 (7%)	0
Elementary school	15 (16%)	14 (16%)
Primary school	30 (33%)	19 (21%)
Secondary school	33 (36%)	41 (46%)
Diploma	2 (2%)	8 (9%)
University	5 (5%)	7 (8%)

Values are number (%) unless otherwise indicated.

Table 1: Demographic and socioeconomic variables

exposure to bombardment as independent variables. Post-traumatic stress disorder was predicted only by having been exposed to bombardment (table 3).

We recorded the reverse trend for anxiety problems—ie, anxiety problems were recorded in significantly more children not directly exposed to bombardment and home demolition than those directly exposed. By using a cut-off score of 18 or above in an initial comparison of the

	Exposed children (n=91)	Non-exposed children (n=89)	p
<b>Severity of PTSD reaction</b>			
No PTSD reaction	3 (3%)	3 (3%)	0.0009
Mild	6 (7%)	22 (25%)	
Moderate	28 (31%)	42 (47%)	
Severe	51 (56%)	22 (25%)	
Very severe	3 (3%)	0	
Combined severe/ very severe	54 (59%)	22 (25%)	0.0009
<b>CPRSD-RI</b>			
Total	43 (31–51)	32 (24–40)	0.0008
Intrusion subscale	15 (10–17)	12 (8–17)	0.021
Avoidance	9 (7–13)	7 (5–10)	0.0007
Arousal	11 (8–13)	7 (5–10)	0.0005
<b>RCMAS (anxiety) score within clinical range</b>			
Non-clinical	71 (78%)	54 (61%)	0.015
Clinical	20 (22%)	35 (39%)	
<b>RCMAS median score</b>	13 (7–17)	16 (12–20)	0.001
<b>Fears checklist</b>	11 (10–13)	9 (6–13)	0.002

Values are number (%) or median (IQR). PTSD=post-traumatic stress disorder. CPRSD-RI=child post-traumatic stress reaction index. RCMAS=revised children's manifest anxiety scale.

Table 2: Reported psychopathology in exposed and non-exposed children

	Odds ratio (95% CI)	p
<b>Independent variables</b>		
Sex	1.13 (0.58–2.20)	0.73
Age	0.90 (0.80–1.02)	0.11
Exposure to bombardment	0.25 (0.12–0.53)	0.0008
Area of residence	1.18 (0.82–1.72)	0.38
Paternal education	0.79 (0.63–1.00)	0.06
Paternal occupation	1.26 (1.07–1.80)	0.11
Maternal education	0.77 (0.55–1.08)	0.12
Maternal occupation	1.31 (0.75–2.29)	0.36

Table 3: Association between exposure, sociodemographic variables, and presence of post-traumatic stress disorder (score within severe or very severe range)

likelihood of anxiety disorders, 35 (39%) non-exposed children and 20 (22%) exposed children were within the likely clinical range ( $p=0.015$ ). We then compared the continuous RCMAS scores, children who had been directly exposed had significantly lower total anxiety scores than controls (table 2). No independent variable was associated with presence of anxiety (RCMAS score within the clinical range) in logistic-regression analysis (odds ratio of belonging to the non-exposed group was 1.98 [95% CI 0.94–4.18],  $p=0.075$ ). The most frequently reported symptoms of anxiety in non-exposed children were: I feel alone even when there are people with me (65 of 89, 73%), I worry a lot of the time (63, 71%), and I worry when I go to bed at night (57, 64%).

Children exposed to bombardment and home demolition scored significantly higher on total fear scores than did controls (table 2). The most frequently reported fears of children exposed to home bombardment were: being at a high place, you feel that it will collapse (69 of 91, 76%), feeling scared in a dark place (65, 71%), fears of being in a closed space (63, 69%), fears of height and high buildings (63, 69%), fears of things and people the child knows will not hurt him (61, 67%), and fears of having an untreatable disease (58, 64%).

## Discussion

The effect of war and political violence on the mental health of children and adults is well established, and usually presents as post-traumatic stress disorder.<sup>10</sup> We have assessed the nature and severity of emotional problems in Palestinian children living in the midst of fighting, but in their own well known environment.

Overall, and in accordance with previous research, post-traumatic stress reactions were both severe and widespread. More than twice as many children exposed to bombardment and home demolition reported severe to very severe post-traumatic stress reactions than those who were not exposed. Prevalence of these reactions was similar to those reported in war-affected children in Iraqi Kurdistan<sup>23</sup> (60% prevalence of post-traumatic stress disorder in a semistructured interview based on DSM III-R criteria<sup>24</sup>), displaced Iranian children<sup>25</sup> (56% in a similar interview), and displaced children in Croatia<sup>26</sup> (49% intrusion and 64% avoidance from the post-traumatic stress disorder scales, in the impact-of-event scale).

By contrast with the hypothesis that all forms of psychopathology would be higher in children who were exposed, we recorded a reverse trend in reporting of anxiety symptoms and disorders, which were consistently higher in children living in parts of the heavily populated Gaza strip not directly affected by shelling and home demolition than in those directly exposed. These findings accord with those of other published work on war-affected children when they are under threat.<sup>7</sup> The most

plausible, albeit speculative, explanation is that children were exposed to violence and war experiences through the media or adult reactions, and expressed anticipatory anxiety through thoughts and worries about what might happen. By contrast, the directly exposed group seemed to have developed thoughts, emotions, and physical reactions to the bombardment (eg, images, flashbacks, nightmares, and fears). This pattern is consistent with findings from studies of children exposed to natural disasters, in which post-traumatic stress reactions were proportionate to the proximity and extent of the exposure, such as after the Armenian earthquake.<sup>18</sup> Another possible explanation is that post-traumatic stress disorder manifested as a dominant disorder within the group of emotional disorders, and masked anxiety in the exposed group.

Our study is limited by our reliance on self-report measures and lack of psychiatric interviews or family measures (which detect a relation between the anxiety of children and parents), absence of a measure of depression, use of a fears checklist that was developed locally, and the absence of detailed measurement of potentially confounding sociodemographic factors. Also, controls were still indirectly exposed to the effect of war through their relatives, other adults, and the media. Nevertheless, we recorded significant differences between the two groups.

Although our cross-sectional design did not address the potential benefits of different interventions, several conclusions and implications can be drawn from the findings. Children's emotional responses to different kinds of exposure to political violence are acute and severe. These emotional responses do arise not only in children known to have been exposed to traumatic events, therefore perceived as vulnerable, but also in supposed non-exposed children, who may not receive special attention. In communities affected by war and other forms of political violence, children's emotional problems can be detected early by professionals and volunteers working in health care, and relief operations and education, rather than by specialists in mental health. Training of such agencies should include ways of communicating with children and basic aspects of child mental health problems, such as post-traumatic stress disorder. Systematic interventions through educational programmes or brief psychological techniques need development and assessment coordinated by international organisations, such as WHO or UNICEF.

#### Contributors

A Thabet and Y Abed had the idea for the study, and with P Vostanis designed the study and interpreted the data. A Thabet also organised the project, and with P Vostanis analysed the data, and wrote the report.

#### Conflict of interest statement

None declared.

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