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Post-traumatic Stress Reactions in Children of War

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The aims of this study were to estimate the rate of post-traumatic stress reactions in Palestinian children who experienced war traumas, and to investigate the relationship between trauma-related factors and PTSD reactions. The sample consisted of 239 children of 6 to 11 years of age. Measures included the Rutter A2 (parent) and B2 (teacher) scales, the Gaza Traumatic Event Checklist, and the Child Post-Traumatic Stress Reaction Index. Of the sample, 174 children (72.8 %) reported PTSD reactions of at least mild intensity, while 98 (41 %) reported moderate/severe PTSD reactions. Caseness on the Rutter A2 scale was detected in 64 children (26.8 %), which correlated well with detection of PTSD reactions, but not with teacher-detected caseness. The total number of experienced traumas was the best predictor of presence and severity of PTSD. Intervention programmes for post-war children need to be evaluated, taking into account developmental and cultural aspects, as well as characteristics of the communities involved.

Keywords: Post-traumatic stress, war, trauma, children.

Abbreviations: CPTSD-RI: Child Post-Traumatic Stress Reaction Index; PTSD: post-traumatic stress disorder.

Introduction

In the last 15 years, there has been substantial research in the phenomenology and prevalence of post-traumatic stress disorders (PTSD) in at-risk groups of children from different ethnic groups and cultures. The majority of studies refer to young people exposed to natural catastrophic events, such as floods (with prevalence of 37 % at post-flood and 7 % at 17 years; Green et al., 1994), and hurricane disasters (short-term prevalence of 3–9 %; Garrison et al., 1995; Shannon, Lonigan, Finch, & Taylor, 1994); also, following earthquakes, with rates varying from 37 % to 91 %, depending on the proximity (Pynoos et al., 1993). Other researchers investigated children who had been exposed to community violence. Pynoos, Frederick, and Nader (1987) studied children who had been exposed to a sniper attack at school. Nearly 40 % were found to have moderate to severe PTSD. Fourteen months later, Nader, Pynoos, Fairbanks, and Frederick (1990) assessed the same children and reported that 74 % of those most severely exposed in the playground still reported high levels of PTSD, and 19 % of unexposed children reported some degree of PTSD. Epidemiological studies differ in their methodology and instruments used (screening, interviewing, two-stage procedure) and their sample size.

The impact of war on children has also attracted the attention of the research community. Kinzie, Sack, Angell, Manson, and Rath (1986) followed up children who had experienced war trauma, 4 years after they left Cambodia, and found that 50 % had developed PTSD and mild but prolonged depression. In a 15-year follow-up of 59 Cambodian young adults, Hubbard, Realmuto, Northwood, and Masten (1995) established a prevalence of 24 % for PTSD, and a lifetime prevalence of 59 % for the same disorder. Nader, Pynoos, Fairbanks, Al-Ajeel, and Al-Asfour (1993), in a study of Kuwaiti children following the Gulf War, found that 70 % reported moderate to severe post-traumatic stress reactions. Weine et al. (1995) established PTSD in 25 % and depression in 17 % of a small sample of Bosnian adolescents who had moved to America during the Yugoslavian war, and Ahmad (1992) found the same rate in displaced Kurdish children. Although depressive symptoms were equally elevated in Croatian children during the war, displaced (refugee) children reported more sadness and fear than local children, who had not moved from their home residence (Zivcic, 1993).

In addition to the prevalence of PTSD, mental health problems have been studied in war victims in relation to experienced traumas. In Israel, about 40 % of kibbutz

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children presented with bereavement reactions of clinical significance, including behavioural problems and social impairment, 3 years after their father's death in war (Elizur & Kaffman, 1982). Those orphaned before the age of 7 years tended to have a narrower awareness and differentiation of their broader social environment (Lifshitz, 1976). In a study of 108 Palestinian children in the Gaza Strip, Qouta, Punamaki, and El Sarraj (1995a) found that the number of traumatic experiences was related to high levels of neuroticism and to impairment of attention, concentration, and memory.

Some studies indicate that there may also be culturally determined variations in the presentation of anxiety or trauma-related disorders. Abu Hein, Qouta, Thabet, and El Sarraj (1993), for example, found a high rate (25%) of conversion fits in Palestinian children living in the Gaza Strip and exposed to traumatic events during the war. Palestinian children living in the West Bank were also found to suffer predominantly from behavioural and psychosomatic problems (Baker, 1990). Behavioural problems were more severe within the refugee camps than in villages or cities. Somatising symptoms, on the other hand, were more severe within the refugee camps and villages. In another study from the Middle East, during the Lebanon civil war, Farhood et al. (1993) found considerable prevalence of somatising symptoms, such as headaches, in both male and female children.

The aims of this study were to investigate: (1) the prevalence of post-traumatic stress reactions in Palestinian children who experienced war, (2) the relationship between traumatic experiences, behavioural and emotional problems, and PTSD reactions, and (3) the nature and frequency of PTSD reaction items in this particular cultural sample.

Methods

Sample

The Gaza Strip is an elongated area that stretches along the Mediterranean Sea, between Israel and Egypt, covering 360 km². It is divided into five districts: North Gaza, Gaza City, Mid-zone, Khan Younis, and Rafah. In 1995, the Gaza Strip population was 860,369, excluding returnees from abroad following the peace process. The Gaza Strip has a high population density of 2150 people per km², which is an index of environmental adversity. The refugee population is 62.6% of the total. About 55.1% live in 8 crowded camps and the remaining 44.9% live outside the camps in rural (villages) and urban areas (towns). In 1995, 50.8% of the population were under 15 years of age, another risk factor for child psychopathology.

In the first stage (Thabet, 1998), 981 children of 6–11 years were selected by stratified quasi-randomisation from the 97 elementary schools of the 5 districts, to be screened by teachers for behavioural and emotional problems using the Rutter B2 Scale (Rutter, 1967). The return rate of the questionnaires was very high (97%). The number of children screened according to the original sample was 959. The "caseness" rates (i.e. possible presence of any mental health disorder) were calculated using previously established cut-off scores of 9 (Rutter, Tizard, & Whitmore, 1970). There were 422 children (44%) who scored positive and 537 (56%) who scored negative.

In the second stage, 25% of children were randomly selected for collection of self-reported and parent-rated data, while maintaining the ratio between positive:negative cases of 44%:56%. The sample of this study therefore consisted of 239 children (105 positive and 134 negative cases). There were 129 boys and 110 girls. The mean age of the sample was 8.9 years (range: 6–11 years). According to place of residence, 42 came from north of Gaza Strip (17.6%), 103 from Gaza City (43.1%), 30 from the Middle area (12.6%), 41 from the Khan Younis area (17.2%), and 23 from the Rafah area (9.6%). The majority attended state schools ($N = 227$, or 95%), while 12 attended private schools (5%).

Materials

Rutter Scale A2 for completion by parents (*Rutter et al. 1970*). This widely used and standardised measure of behavioural and emotional problems in epidemiological research has been found to correlate well with clinical interviews and to distinguish clinical from nonclinical subjects, with a high degree of sensitivity and specificity for children of 6–13 years. Different cut-off scores have been established according to sex and ethnic origin (Elander & Rutter, 1996). The scale consists of 31 items measuring behavioural and emotional problems on a 0–2 scale. Children with a total score of 13 or more have been found to be potential "cases", i.e. presenting with a possible mental health disorder.

Rutter Scale B2 for completion by teachers (Rutter, 1967). This is the equivalent 26-item form for teachers. Children with a total score of 9 or more have been found to be potential cases. The Rutter Scales A2 and B2 were translated into Arabic, following meetings with teachers and piloting of the translated version.

Gaza Traumatic Event Checklist (*Abu Hein et al., 1993*). The initial checklist was developed by the research department of the Gaza Community Mental Health Programme and consisted of 17 items covering different types of traumatic events that a child may have been exposed to (tear gas, beating, witnessing beating, breaking limbs, imprisonment, siblings' imprisonment, injury, night raids, humiliation, and detention). The checklist can be completed by children of 6–16 years ("yes" or "no" statements). Traumatic experiences can be classified as "few" (less than 5 traumatic events), "frequent" (5–9 events), or "many" (10 or more—Summerfield, 1993). A revised version of the checklist was used in this study, with 21 items. These included different sensory types of exposure to traumatic experiences, i.e. auditory, visual, or olfactory experiences (Table 1).

Child Post-Traumatic Stress Reaction Index (*CPTSD-RI: Pynoos et al., 1987*). The CPTSD-RI is a 20-item self-report scale designed to assess post-traumatic stress reactions of children of 6–16 years following exposure to a broad range of traumatic events (Frederick, 1985). The scale has been found valid in detecting PTSD according to DSM-III-R criteria (American Psychiatric Association, 1987). Inter-rater reliability for this instrument when administered by a clinician has been reported to be high, with Cohen kappa of .87 for inter-item agreement (Pynoos et al., 1987). Items are rated on a 0–4 scale. Scores were classified as "mild PTSD reaction" (total score of 12–24), "moderate" (25–39), "severe" (40–59), and "very severe" (above 60–Goenjian et al., 1995). The CPTSD-RI was also translated into Arabic, following piloting.

Statistical Analysis

Descriptive statistics were used to present the characteristics of the sample. Within-sample associations between continuous variables were tested by Spearman rank correlation test. The proportion of cases identified by different measures and informants were compared by McNemar nonparametric test for related samples. The associations of categorical (e.g. types of

traumas) and continuous variables with presence of PTSD reactions or caseness on the Rutter scales were tested by series of stepwise forward regression analyses.

Results

The Rutter Scales

According to parent-completed Rutter A2 Scales (100 % completion rate), 64 children (26.8 %) exceeded the cut-off score of 13. The mean total score was 8.27 (*SD* 7.0), with item frequency ranging from 0 to 32. The items most frequently rated as "certainly applies" (scale 2) were: being restless ($N = 48$, or 20.1 %), irritable ($N = 33$, or 13.8 %), worrying ($N = 26$, or 10.9 %), and bed wetting more than once per week ($N = 25$, or 10.5 %). Somatising items were not rated very highly: 13 children (5.4 %) were rated as having headaches and 6 children (2.5 %) as having asthma (both on scale 2).

The mean total score on the Rutter teacher scale was 10.5 (range 0–43). Teachers reported worrying ($N = 52$, or 21.8 %), restlessness ($N = 52$, or 21.8 %), fearfulness ($N = 37$, or 15.5 %), and poor concentration ($N = 36$, or 15.1 %) as the most frequent items on scale 2. Ten children (4.2 %) had aches on the same scale. Detection of caseness for any mental health disorder by parents and teachers differed significantly (McNemar test: $\chi^2 = 17.2$, $p < .0005$). There was no significant sex difference on the rates of caseness according to either parent or teacher scales. Demographic data and instrument scores are presented in Table 2 for both positive and negative subjects on the teacher Rutter A2 scales, according to which this sample was selected.

Table 1
Traumatic Experiences: Gaza Traumatic Event Checklist (N = 239)

Traumatic event	N	%
Witnessing beating of close relative	53	22.2
Witnessing beating of friend	82	34.3
Witnessing killing of close relative	11	4.6
Witnessing killing of friend	35	14.6
Hearing of killing of close relative	19	7.9
Hearing of killing of friend	56	23.4
Witnessing shooting of close relative by rubber/plastic or real bullets	30	12.6
Witnessing shooting of friend	59	24.7
Shot by rubber/plastic or real bullets	6	2.5
Beaten up	13	5.4
Witnessing relative's detention	51	21.3
Witnessing friend's detention	76	31.8
Tear gas inhalation	134	56.1
Witnessing night raids	100	41.8
Witnessing day raids	117	49.0
Imprisonment	2	0.8
Having limbs broken	3	1.2
Witnessing breaking relative's limbs	10	4.2
Witnessing breaking friend's limbs	36	15.1
Witnessing house closure/demolition	7	2.9
Witnessing friend's house closure/demolition	35	14.6

Traumatic Experiences (*Gaza Traumatic Events Checklist*)

Children were exposed to a wide range of traumatic experiences. Of the 21 possible exposures, the average child endorsed an average of 4 (median: 3, mode: 0, range 0–15). The frequency of reported items is presented in Table 1. Significantly more boys than girls had witnessed the breaking of limbs of a close friend ($\chi^2 = 5.6$, $p = .02$) and demolition of their house ($\chi^2 = 6.1$, $p = .01$). The number of traumas experienced was significantly correlated with children's age (Spearman rank correlation coefficient $R = .28$, $p < .0005$), i.e. older children had experienced more traumatic events.

Table 2
Positive and Negative Subjects on the Teacher Rutter A2 Scales

	Positive ($N = 105$)	Negative ($N = 134$)	Difference
Mean age (range)	9.1 (6–11)	8.9 (6–11)	$t = 0.9$, $p = .36$
Sex	Male: 56 (53.3 %) Female: 49 (46.7 %)	Male: 73 (54.5 %) Female: 61 (45.5 %)	$\chi^2(1) = 0.03$, $p = .86$
Area of residence	North area: 22 (20.9 %) Gaza: 37 (35.2 %) Middle area: 13 (12.4 %) Khan Younis: 23 (21.9 %) Rafah: 10 (9.6 %)	North area: 20 (14.9 %) Gaza: 66 (49.3 %) Middle area: 17 (12.7 %) Khan Younis: 18 (13.4 %) Rafah: 13 (9.7 %)	$\chi^2(4) = 6.37$, $p = .17$
Mean number of experienced traumas (range)	4.5 (0–15)	3.4 (0–12)	$t = 2.6$, $p = .01$
Caseness on parent Rutter B2	Positive: 38 (36.2 %)	Positive: 26 (19.4 %)	McNemar test: $\chi^2 = 17.2$, $p < .0005$
Any PTSD reaction	84 (80 %)	90 (67.2 %)	McNemar test: $\chi^2 = 11.9$, $p = .0006$
Moderate–severe PTSD reaction	52 (49.5 %)	46 (34.3 %)	McNemar test: $\chi^2 = 8.7$, $p = .003$
Mean CPTSD-RI score (range)	22.2 (0–45)	18.1 (0–46)	Mann-Whitney test: $z = 2.47$, $p = .01$

Table 3
Self-reported CPTSD-RI Items ((N = 239)

CPTSD-RI item	None (%)	Few/some (%)	Frequent/ most of the time (%)
Identified as traumatic (A1)	27.2	29.7	43.1
Regular fear (A2)	31.1	31.9	37.0
Repetitive images (B1)	43.3	39.9	16.8
Repetitive thoughts (B1)	44.2	42.0	13.8
Nightmares (B2)	44.7	42.2	13.1
Fear of recurrence (B3)	66.0	23.5	10.5
Anhedonia (C4)	24.7	38.1	37.2
Emotional detachment (C5)	62.8	28.4	8.8
Emotional avoidance (C1)	52.7	37.3	10.0
Emotional numbing (C6)	62.4	32.6	5.0
Easily startled (D5)	59.0	36.0	5.0
Sleep disturbance (D1)	52.9	44.1	3.0
Memory difficulties (D3)	59.0	36.0	5.0
Concentration difficulties (D3)	33.9	23.4	42.7
Social avoidance (C2)	43.1	29.3	27.6
Upset by reminders (B4)	39.3	41.9	18.8
Somatic complaints (B5)	62.4	28.0	9.6
Behaviour outburst (D2)	72.4	24.7	2.9
Guilt	65.7	27.6	6.7
Sense of foreshadowing	64.0	31.4	4.6

A–D: items included in DSM-IV criteria (309.81 Post-traumatic stress disorder; American Psychiatric Association, 1994)

Post-traumatic Stress Disorder Reactions

Overall, 174 children (72.8 %) reported post-traumatic stress reactions of at least mild severity: 76 (31.8 %) reported mild reactions, 85 (35.6 %) moderate, and 13 (5.4 %) severe PTSD reactions. The mean CPTSD-RI score was 19.9 ($SD = 12.9$, range 0–46). The most frequently reported symptoms were: thoughts and fear related to the trauma, anhedonia, impaired concentration, and avoidance of situations that reminded them of the trauma (Table 3). There was no significant sex difference on the rates of PTSD reactions or total PTSD scores. There was significant difference on the ratings of only one PTSD symptom (event identified as traumatic), which was rated higher by boys (Mann-Whitney U test $z = 1.9$, $p = .05$).

PTSD reactions were also dichotomised as (a) present/absent, and (b) absent or mild/moderate or severe, which was entered as the dependent variable in a series of stepwise logistic regression analyses. The total number of traumatic events experienced ($B = 0.74$, $p < .0005$) and living north of Gaza City (which reflects a refugee population: $B = 1.79$, $p = .006$) best predicted presence of PTSD reaction. The total number of traumatic events also best predicted moderate/severe PTSD reactions ($B = 0.32$, $p < .0005$).

The total number of experienced traumas and the total PTSD score were significantly associated (Spearman rank coefficient of correlation $R = .64$, $p = .000$). Among the traumatic events, presence of PTSD reaction was best predicted by having experienced tear gas attacks ($B = 0.95$, $p = .001$), and having witnessed the beating of a friend ($B = 0.95$, $p = .001$) or day raids ($B = 0.60$, $p = .006$). A moderate to severe PTSD reaction was best predicted by having experienced tear gas attacks ($B = 0.71$, $p = .001$), and having witnessed the killing ($B = 0.68$, $p = .003$) or beating of a friend ($B = 0.41$, $p = .01$).

The proportion of detected "cases" by parents on the Rutter A2 scale and detected PTSD reactions on the CPTSD-RI did not differ significantly (McNemar test: $\chi^2 = 0.00$, $p = .99$). There was, however, significant difference on the detection of "caseness" by teachers on the Rutter B2 scale and of PTSD on the CPTSD-RI ($\chi^2 = 11.9$, $p = .0006$).

Discussion

This study found high rates of post-traumatic stress reactions in children of primary school age who had experienced war. According to children's reports, 73.2 % reported PTSD reactions of at least mild severity, whilst 39 % reported moderate to severe reactions. A limitation was the absence of assessment of global functioning or a clinical interview in addition to the CPTSD-RI, in order to establish whether children met all criteria for PTSD. Although a number of studies have used the CPTSD-RI and the classification of its total scores into mild, moderate, severe, and very severe reactions (e.g. Nader et al., 1993; Shaw et al., 1995), the clinical implications of the scoring system remain unclear. Goenjian et al. (1995) found that the "severe" categories correctly identified 78 % of subjects who met DSM-III-R criteria for PTSD. However, if the CPTSD-RI was used for screening purposes, children of at least "moderate" severity should also be included. About 27.5 % of children were potential cases of mental health disorder according to parental ratings on the Rutter A2 scale, a rate similar to other deprived urban populations.

Children who lived north of Gaza City, an area of refugee camps, were more likely to experience PTSD. The refugee population may reflect mediating adversities such as relocation and disruption of school life or peer relationships. It could also reflect higher exposure to life events such as house demolition (Qouta, Punamaki, & El Sarraj, 1997). The previous finding of dose-effect relationship between cumulative trauma and PTSD symptoms (e.g. Mollica, Poole, Son, Murray, & Tor, 1997) was replicated in this population. The research was carried out following the peace accord. In a longitudinal study of Palestinian children living in the Gaza Strip, Qouta,

Punamaki, and El Sarraj (1995b) found that their level of neuroticism was significantly lower after the peace treaty than before. Earlier exposure to traumatic experiences and nonacceptance of the treaty (continuing political activity and nonparticipation in peace treaty festivities) predicted increased neuroticism and low self-esteem.

Although we investigated the extent of trauma and its impact on PTSD, other possible mediating variables, such as family functioning, adult perceptions of trauma, or perceived parenting (Elizur & Kaffman, 1983; Laor et al., 1997; Punamaki, Qouta, & El Sarraj, 1997), and their interaction with trauma, were not accounted for in this study. Secondary adversities such as school and social network disruption are also important. For example, Farhood et al. (1993) found that Lebanese family members were confident that they could rely on social support to deal with problems of various natures during the war. A high level of social support, family cohesiveness, and family communication has been found to protect children by mediating the effect of war trauma (Cohen & Dotan, 1976; Figley, 1983; Ziv & Israeli, 1973).

Despite the war, there was relative stability in our population to enable them to continue to attend school, which could thus form the basis for detection of children most at risk and intervention (Yule, 1992, 1994). General screening instruments with high sensitivity and specificity such as the Strengths and Difficulties Questionnaire, which has since extended the Rutter scales used in this study (Goodman, 1997), would be appropriate. As mentioned earlier, the use of specific instruments such as the CPTSD-RI for screening purposes is less well established, in which case a cut-off score indicative of "low to moderate" severity could be adopted.

As there was a substantial proportion of cases undetected by teachers, screening methods should also involve children and parents. The significant difference on rates of cases detected by parents and teachers could be related to the nature and presentation of mental health problems (situation-specific) or lack of awareness by teachers (Kent, Vostanis, & Feehan, 1995). Discrepancy between teacher and parent reports has been found previously on different child mental health symptoms and disorders, particularly emotional problems such as those characterising this sample (Kolko & Kazdin, 1993). Compliance with such programmes is likely to be high in close communities, as demonstrated by the participation rate in this study. Goenjian et al. (1995) suggested a realistic and cost-effective method of screening, i.e. periodic monitoring of secondary adversities that may have a cumulative risk effect and precipitate new-onset disorders.

A "cultural" hypothesis on the phenomenology of mental health and PTSD symptoms was not supported. For example, children did not present predominantly with somatising or behavioural problems. High rates of cognitive and emotional PTSD symptoms were reported. Previous research with victims of war trauma has supported the validity of PTSD "beyond the barriers of culture and language" (Sack, Seeley, & Clarke, 1997). In another epidemiological study by the authors with a different and older sample of Palestinian children (9–13 years of age; Thabet & Vostanis, 1998), children reported high rates of significant anxiety problems (21.5%) and similar phenomenology to Western populations. Anxiety symptoms were associated with socio-economic deprivation, while the higher prevalence rates among females was explained by the 12–13-year-old children of that sample (in contrast with the younger sample of the present study).

Future research could address cultural variations by studying the perceived impact of the trauma and the children's "meaning" of it among different cultures. Eisenbruch (1991) proposed an interesting concept of "cultural bereavement", which includes the refugees' picture—what the trauma meant to them; their cultural ways of signalling distress; and their cultural strategies for overcoming it. At the same time, certain coping mechanisms and protective factors appear to be independent of culture and societal structure. In a review of the psychological effects of war on children, Jensen and Shaw (1993) put forward a positive message on the development of coping skills due to children's "cognitive immaturity, plasticity and innate adaptive capacities, which can protect from trauma in low-to-moderate war time settings".

The development and evaluation of treatment interventions for post-war child populations, where "natural community groupings exist" (Yule, 1994), can be school- and group-based. Galante and Foa (1986) demonstrated the effectiveness of school-based group treatment for at-risk children following earthquake in Italy (seven hourly sessions for one week). Brief cognitive-behavioural treatment that aimed at improving children's locus of control and self-esteem has also been described (Baker, 1990). Parents should be involved in these programmes as far as possible.

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