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Immediate Psychological Reactions in the Emergency Department Following Exposure to Potentially Traumatic Events

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ABSTRACT: ***Objectives:*** *Peri-traumatic reactions to potentially traumatic events are likely to play a part in the development of posttraumatic stress disorder. In addition they are the focus of psychological first aid. Most studies have retrospective data, sometimes gathered months after the event. This study reports on data collected in the Emergency Department following a traumatic event.* ***Methods:*** *Consecutive admissions to a Level I trauma center following motor vehicle accident or terror attacks were assessed for objective aspects of the event, peri-traumatic distress and dissociation, while still in the Emergency Department.* ***Results:*** *These show that different interventions are associated with different event types. Motor vehicle accidents appear to contain fewer objectively difficult aspects, and survivors report corresponding lower distress and dissociation.* ***Conclusions:*** *These data give preliminary evidence for levels of distress and dissociation found in the first hours following a traumatic event, following different event types.*

Keywords: *PTSD, Emergency Department, Immediate psychological responses to trauma*

INTRODUCTION

Although a significant percentage of admissions to the Emergency Department (ED) are subsequent to potentially traumatic events, little is known about the immediate mental health needs of these patients. Longer term follow up studies have shown that between 17-35 % of ED admissions after traumatic events develop posttraumatic stress disorder (PTSD)(Shalev & Freedman, 2005). Immediate psychological reactions to traumatic events have always been considered salient to the development of PTSD; indeed, until the publication of DSM 5 (American Psychiatric Association, 2013) these initial reactions formed part of the definition of a traumatic event (Karam et al., 2010). Studies have shown that both levels of distress and symptoms of dissociation in the early aftermath of a traumatic event are predictive of PTSD (Nishi et al., 2010).

In terms of immediate mental health interventions, a number of publications have outlined the use of Psychological First Aid (PFA) in the hours following a traumatic event (Brymer et al., 2007) . These guidelines give important direction for clinicians and others in contact with individuals in the immediate aftermath of a traumatic event, and their use is predicated on common reactions seen during these hours.

However, most data available regarding these very early reactions have been collected retrospectively. In some cases, individuals reported what happened during and after the event months or even years afterwards (Nishi et al., 2010) . This brings into question the reliability of such reports, since these have been shown to be less consistent in those suffering from PTSD (David, Akerib, Gaston, & Brunet, 2010).

These authors have been able to find only one study that collected data regarding peri-traumatic reactions in the immediate aftermath of an event (Lewis et al., 2015). In that cross sectional study of ED attendees following a motor vehicle accident, 38% reported peri-traumatic distress symptoms and 28% reported dissociation. The correlation between distress and dissociation was not strong, possibly indicating that these are distinct entities.

Given the paucity of data regarding very early reactions, and the wish to implement appropriate help in the first hours following an event, we report here data regarding initial responses of trauma survivors, while they are still in the ED following a traumatic event. The study includes individuals who have been involved in either motor vehicle accidents or terror attacks. This study describes both objective characteristics related to the event, immediate medical treatment in the ED, as well as levels of distress, dissociation and pain endorsed by patients in these first hours following trauma exposure.

MATERIALS & METHODS

Subjects

252 patients arriving at a Level I Trauma University Hospital's Emergency Department following a potentially traumatic event were assessed for eligibility to participate. After establishing that patients were between the ages of 18 and 65, had experienced a traumatic event meeting DSM-IV Criterion A1 (Karam et al., 2010), and had not experienced a head injury involving confusion, loss of consciousness, or amnesia; nor had experienced a traumatic event that reflects ongoing victimization, they were invited to participate in the study, and signed informed consent. The study was approved by the hospital's Internal Review Board. Participants were recruited by psychologists experienced in the diagnosis and assessment of PTSD.

Instruments

Trauma evaluation

Emergency Department Questionnaire (Shalev et al, 2011 unpublished).

This is a four-part questionnaire.

Firstly, nine *objective aspects* of the event and its aftermath

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are assessed as present or absent; for example, whether there were fatalities, whether medical interventions were needed. Secondly, three items assessed *dissociation* (feeling of unreality; time distortion and depersonalization (Marmar, Metzler & Otte, 2004)); these were assessed on a five point scale, giving a range of 0-27. Thirdly, eleven items assessed *peri-traumatic distress*, scored on a five point scale, giving a range of 0 – 44. Five of these questions were taken from the Peri-traumatic Distress Inventory (Brunet et al., 2001) , the remainder assessed perceived surprise, danger, general difficulty, a feeling that the event would never end, lack of control and fear; Cronbach's alpha for this study was 0.80. Fourthly, the trained psychologist was asked to rate the individual's psychological reaction to the event, from 0 indicating no reaction, to 4 indicating a severe reaction.

Statistical analyses

Data were collected and analysed using SPSS. Chi^2 was used for categorical variables; Student t-test for group differences.

RESULTS

Participants and background characteristics

In the ED, 252 patients filled out the ED questionnaire; these included 142 men (56.3%) and 110 women (43.7%), with an average age of 31.3 years. Two hundred and twenty four (88.9%) had experienced a motor vehicle accident (MVA), and 28 (11.16%) a terrorist attack.

In order to determine whether these subjects were representative of the general ED population, they were compared with 1436 consecutive ED patients, a group that was recruited from the same ED, and which was surveyed as part of another research study (Shalev, Ankri, Peleg, Israeli-Shalev, & Freedman, 2011) . There were no significant differences in terms of age (current study, 31.2(10.9), cf. 32.7 (11.0), F (1,1592) = 2.35, ns), gender (current study, 56% male, cf. 53%, $X^2 = 1.48$, ns), subjective estimation of danger (current study, 72.8% considered event dangerous, cf. 76.3%, $X^2 = 0.81$, ns) or subjective fear during event (current study, 87.8% were scared, cf. 91.5%, $X^2 = 2.2$, ns).

Table 1 shows the differences in objective aspects of the trauma and its aftermath, between the two trauma types. Terrorist attacks were significantly more likely to involve death or injury, and exposure to grotesque scenes. In addition, victims of terrorist attacks were more likely to require medical interventions, with the exception of being seen by orthopaedics. Similarly, most subjective ratings were significantly higher for victims of terrorist attacks than motor vehicle accidents (Table 2) with the exception of helplessness and pain.

Prediction of peri-traumatic distress

Multiple regression analysis was used to test if background and

Table 1.
Objective aspects of event and injury.

	MVA N (%)	**Terror N (%)**	**Total N (%)**	**X^2**
Physically injured	123 (57.5%)	16 (61.5%)	139 (59.5%)	0.16
Infusion	27 (12.9%)	10 (40%)	37 (15.7%)	12.41***
Head injury / loss of consciousness	36 (17.3%)	2 (8%)	38 (16.3%)	1.42
Stitches	12 (5.8%)	5 (20%)	17 (7.3%)	6.69***
Orthopedic	81 (48.2%)	4 (18.2%)	85 (44.7%)	7.09***
Operation	3 (1.5%)	1 (4.2%)	4 (1.7%)	0.92
Pain	214 (97.3%)	19 (73.1%)	233 (94.7%)	27.2***
Bleeding: None	182 (87.5%)	15 (62.5%)	197 (84.9%)	26.08***
Death	7 (3.4%)	10 (40%)	17 (7.3%)	44.05 ***
Injury	125 (60.7%)	17 (73.9%)	142 (62%)	1.54
Witness Injury or Death	53 (25.7%)	16 (64%)	69 (29.9%)	15.59***
Grotesqueness	42 (20.8%)	11 (50%)	53 (23.7%)	9.37*

Table 2.
Subjective aspects of event.

	MVA M (SD)	**Terror M (SD)**	t
Pain Level	2.4 (0.9)	1.96 (1.4)	2.05***
Dissociation			
Not real	1.39 (1.4)	1.79 (1.6)	-1.3
Time distortion	1.67 (1.5)	2.52 (1.4)	-2.7***
Happening to someone else	0.64 (1.1)	0.92 (1.4)	-1.09
Total Dissociation	3.51 (3.1)	4.57 (3.5)	-1.66
Distress			
Surprise	3.56 (0.8)	3.39 (1.1)	0.85
Personal safety	2.33 (1.4)	2.7 (1.4)	-1.1
Others safety	1.9 (1.7)	2.64 (1.6)	-1.9
Shocked	1.69 (1.5)	2.96 (1.5)	-3.8***
Going to die	1.13 (1.5)	2.09 (1.6)	-2.8***
Never end	0.78 (1.2)	1.55 (1.5)	-2.68***
Difficulty	2.74 (1.1)	3.39 (0.9)	7.91**
Helplessness	2.26 (1.7)	1.43 (1.5)	2.19***
No control	2.85 (1.3)	2.59 (1.4)	0.07
Fear	2.43 (1.5)	2.9 (1.5)	-1.45
Total Distress	21.06 (9.6)	21.89 (12)	0.42
Psychologists Appraisal	1.65 (0.8)	2.32 (0.9)	-3.96***

objective variables significantly predicted participants' ratings of distress. The results of the regression indicated that three predictors explained 20.6% of the variance in distress (R^2 = .206, F(15,139) = 2.4, p<0.05); injury (β = -.58, p<0.05), pain (β = -.89, p<0.05), and being female (β = - .32, p<0.05).

DISCUSSION

This study illustrates the initial reactions reported by survivors of traumatic events in the immediate aftermath of those events. The results indicate a range of medical interventions were received in the ED. Individuals arriving following a motor vehicle accident needed fewer medical interventions than following terror attacks. They were less likely to receive an infusion or stitches, and reported less bleeding, although were more likely to need checking by an orthopaedic surgeon. This reflected their descriptions of the event: these were less likely to involve death, or witness to injury, and were less exposed to grotesque images. There exists no data of which we are aware to compare these results, and so it is not possible to know whether these results are typical following these types of incidents.

Levels of dissociation reported in this sample were low, although terror attack victims reported significantly higher levels of time distortion. Dissociation in general is associated with a higher risk of later PTSD (Nishi et al., 2010), and has been shown to predict PTSD in trauma victims attending the ED, as well as a poorer response to immediate intervention (Price, Kearns, Houry & Rothbaum, 2014). Terror attack victims reported significantly lower levels of pain than motor vehicle accidents; it is possible that this is related to dissociation, since some studies have shown this association (Defrin, Schreiber & Ginzburg, 2015) . These results show that of the three symptoms of dissociation assessed, only time distortion was correlated with psychologists' appraisal of general level of reaction. This finding is consistent with the recommendations for Psychological First Aid, which indicates that while general levels of numbing are common and to be expected, a lack of orientation is more likely to require help (Brymer et al., 2007) .

Studies have shown that a dose-response effect exists, such that as a traumatic event is more difficult in an objective sense, then the subjective response will correspondingly be stronger (Henriksen, Bolton & Sareen, 2010). That relationship is illustrated by these results: MVA survivors reported objectively less difficult events, and expressed lower levels of immediate distress than those who had experienced terror attacks.

This study is limited in that it is a cross sectional design. Although data collected in this sample is representative of this ED setting, these may not reflect immediate responses in the more severely wounded, or following different traumatic events, for instance natural disasters. In addition, the lack of clinical interview data is an additional limit.

Nonetheless, the paucity of data regarding these very early responses means that these data have some significance. Victimization and violent crime are related to elevated societal costs (Wickramasekera et al., 2015; Ousey, Wilcox & Schreck, 2015), as is PTSD itself (Kessler, 2000); therefore knowledge regarding immediate responses and appropriate interventions may have wide reaching effects. Future studies should expand the questionnaires used, and the trauma populations assessed; this will allow for more informed decisions regarding immediate interventions.

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