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Psychological consequences of terrorist attacks: Prevalence and predictors of mental health problems in Pakistani emergency responders

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ABSTRACT

Earlier research showing moderate to high prevalence rates of post-traumatic stress disorder (PTSD) and other mental health problems in emergency personnel has mostly been carried out in Western countries. Data from non-Western countries are largely lacking. The current study aimed to gather evidence on the prevalence of PTSD, anxiety, and depression in $N=125$ Pakistani emergency workers, most of whom ($n=100$; 80%) had been exposed to terrorist attacks. Fifteen percent of participants showed clinically relevant levels of PTSD, and 11–16% of participants reported heightened levels of anxiety or depression. Neither the experience of terrorist attacks per se nor the severity of the attack experienced was related to symptom severities. However, symptom levels of PTSD were related to a number of predictor variables, including subjective threat, peritraumatic dissociation, past traumas, rumination, and avoidant coping. Only a few variables were predictive of levels of anxiety and depression. In sum, a substantial subgroup of emergency workers experienced mental health problems, and prevalences were in the high range of those reported in earlier studies focusing on emergency personnel in Western countries.

1. Introduction

Post-traumatic stress disorder (PTSD) is a severe and disabling disorder that can develop after traumatic experiences. A large body of literature has focused on PTSD in military personnel as these individuals are frequently exposed to trauma during deployment to conflict or war zones (Creamer et al., 2011). However, they are not the only group of professionals who are exposed to traumatic events as part of their job. Civilian emergency responders such as police officers, ambulance service personnel or fire-fighters also have to deal with potentially traumatizing experiences on a regular basis (Kopel and Friedman, 1997; Maguen et al., 2009). Prevalence estimates of PTSD in these groups differ considerably between studies, ranging from 6% up to more than 20% (Sterud et al., 2006; Berger et al., 2007; Martin et al., 2009). Importantly, the presence of PTSD in emergency personnel has been found to be related to reduced quality of life, poor physical health, more medical visits and more suicidal ideation (Berger et al., 2007; Maia et al., 2007). Although research into the consequences of work-related traumas has mainly focused on PTSD, there is evidence that these events can also lead to heightened levels of somatization, anxiety disorders other than PTSD, and general psychopathology (Sterud et al., 2006; Lilly et al., 2009).

The finding that not all professionals exposed to trauma develop post-traumatic stress symptoms raises the question whether risk factors or predictors for PTSD can be identified in this group. Earlier research on police officers and/or ambulance service workers has identified four groups of variables that are associated with the development of PTSD following work-related traumatic events. The first group includes pre-trauma risk factors, such as a family history of psychopathology (Inslicht et al., 2010), childhood emotional abuse (McCaslin et al., 2006), high levels of anxiety sensitivity (Asmundson and Stapleton, 2008), high levels of alexithymia (McCaslin et al., 2006) and trait anger (Meffert et al., 2008). Secondly, the individual's response to the traumatic event has been found to be predictive, especially high levels of peritraumatic distress (Marmar et al., 2006; Lilly et al., 2009; Inslicht et al., 2010) and/or peritraumatic dissociation (Marmar et al., 2006; McCaslin et al., 2008; Lilly et al., 2009; Martin et al., 2009). Third, additional stressors experienced in the post-trauma phase, such as greater routine work stress (Marmar et al., 2006; Maguen et al., 2009) and low levels of social support (Marmar et al., 2006; Martin et al., 2009), have been found to be associated with a diagnosis or symptom severity of PTSD. Finally, there is evidence that dysfunctional coping strategies some trauma survivors engage in, such as rumination and thought suppression, are related to the maintenance of PTSD (Clohessy and Ehlers, 1999).

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Past research is limited by the fact that the vast majority of studies have been conducted in Western countries. However, the prevalence and type of traumatic events experienced by emergency personnel can be expected to differ considerably between different countries and regions of the world, depending on the political and economic circumstances. For example, in several Middle Eastern and South Asian countries, emergency service workers are frequently confronted with terrorist attacks, defined as "incidents in which subnational or clandestine groups or individuals deliberately or recklessly attacked civilians or noncombatants" (NCTC, 2010, p. 4). In 2009, an estimated 2670 people were killed in terrorist attacks in Pakistan, 2778 in Afghanistan, and 3654 in Iraq (NCTC, 2010). Thus, in certain parts of these countries emergency service personnel routinely have to deal with the aftermath of terrorist attacks. To our knowledge, no study to date has investigated the prevalence of PTSD and/or other psychopathology in this population. It appears conceivable that terrorist attacks may lead to higher levels of PTSD than other work-related traumatic events, for a number of reasons. First, research on survivors of non-work-related terrorist attacks has shown high prevalence estimates of up to 36% (Shalev and Freedman, 2005; Kutz and Dekel, 2006; Zara Page et al., 2009). Second, terrorist attacks often lead to a large number of casualties and involve exposure to relatively extreme scenes (e.g., body parts) for emergency personnel. Finally, emergency workers may perceive high levels of threat to themselves or their loved ones during and after terrorist attacks.

The current study aimed to provide data on the prevalence and predictors of PTSD, anxiety and depression in Pakistani emergency service workers. It was expected that (1) a substantial subgroup of emergency service workers show clinically significant levels of psychopathology, (2) those who had been confronted with one or more terrorist attacks show higher levels of psychopathology than those who had not, and (3) levels of PTSD can be predicted by (a) the objective threat posed by the event(s), (b) levels of perceived threat, (c) peritraumatic dissociation, (d) dysfunctional coping strategies (e.g., rumination, thought suppression), and (e) social support.

2. Methods

2.1. Participants

The current sample consisted of 125 male emergency workers employed by the Punjab Emergency Service (Rescue 1122) based in Lahore, Pakistan. Professions included firemen, emergency rescue staff, emergency vehicle drivers, medical staff, and technicians. Individuals were eligible for the study if they had been deployed to any disaster or emergency situation, including fire, accidents, violence, or terrorist attacks. A total of 200 individuals were approached, 125 of whom returned questionnaires with complete data (response rate: 62.5%). Most participants (80%) had been exposed to at least one terrorist attack or its aftermath as part of the work. Sample characteristics are shown in Table 1.

2.2. Instruments

2.2.1. Symptom severities

Three self-report questionnaires were used to assess symptoms of PTSD, anxiety and depression.

Symptom levels of PTSD were measured using the *Impact of Event Scale-Revised* (IES-R) (Weiss and Marmar, 1996; Urdu version: Ehring et al., 2011). This widely used questionnaire consists of 22 items that are rated on a scale from '0' (not at all) to '4' (extremely) and cover all DSM-IV symptoms of PTSD. Earlier research has established good psychometric properties for the IES-R (Creamer et al., 2003); α in this sample=0.91. A cutoff of 33 on the total score has been shown to possess a good diagnostic efficiency for a diagnosis of PTSD (Creamer et al., 2003). Therefore, this cutoff was used to establish a probable diagnosis of PTSD in the current study.

The *Pakistan Anxiety and Depression Questionnaire* (PADQ) (Mumford et al., 2005) was used to assess symptom levels of anxiety and depression. The PADQ is a culturally sensitive screening instrument for anxiety and depression symptoms specifically developed for a Pakistani population. The questionnaire consists of two subscales, a mixed anxiety and depression scale (15 items; α in this sample=0.73) and a depression scale (15 items; α in this sample=0.73). All items are answered with 'yes' (scored as '1') or 'no' (scored as '0'). For both subscales, sum scores of 6 or more are indicative of a probable anxiety or depressive disorder (Mumford et al., 2005).

Furthermore, somatic symptoms associated with anxiety and depression were assessed with the 44-item-version of the *Bradford Somatic Inventory* (BSI) (Mumford et al., 1991). The BSI is a multi-ethnic questionnaire with good psychometric properties in Pakistani samples (Mumford et al., 1991). Participants are asked to rate each item as 'not present during the past month' (scored as '0'), 'present during the past month on more than 15 days' (scored as '1') or 'present during the past month on a total of 15 days' (scored as '2'). Scores above 13 have been shown to reflect clinically relevant symptom levels in male participants (Mumford et al., 2005). The internal consistency of the BSI in this study was high (α=0.95).

2.2.2. Aspects of the terrorist attack and participants' peritraumatic response

The *Terrorist Attack Experience Questionnaire* (*TAEQ*) was developed for the current study to assess participants' exposure to terrorist attacks and their response to it. The questionnaire consists of three parts. The first part consists of two questions assessing whether participants had ever been at the scene of a terrorist attack (1) *while it happened* and (2) *after it had just happened*. Only participants answering 'yes' to at least one of these questions were asked to fill in the remainder of the TAEQ. The second part of the questionnaire consists of three questions assessing the degree of *objective threat* experienced ("Did you see dead bodies or body parts?"; "Did you have to listen to people telling you in great detail about their experiences of the attack?"; "Did you hear sounds and cries for help?";

Table 1
Sample characteristics.

	Total sample	Exposed to terrorist attack?		Statistics
		No (n=25)	Yes (n=100)	
Age [M (S.D.)]	27.87 (4.82)	25.88 (3.47)	28.37 (4.99)	$t(51.91)=-2.91$, $p=0.005$
Marital status [N (%)]				χ^2 (1, N=125)=5.51, $p=0.03$
Single/divorced	81 (64.8%)	21 (84%)	60 (60%)	
Married	44 (35.2%)	4 (16%)	40 (40%)	
Children [N (%)]				χ^2 (1, N=125)=4.30, $p=0.04$
Yes	36 (28.5%)	3 (12%)	33 (33%)	
No	89 (71.2%)	22 (88%)	67 (67%)	
Highest qualification [N (%)]				χ^2 (1, N=125)=9.21, $p=0.03$
High school	18 (14.4%)	1 (4%)	17 (17%)	
Bachelor	82 (65.6%)	14 (56%)	68 (68%)	
Master	16 (12.8%)	6 (24%)	10 (10%)	
Other	9 (7.2%)	4 (16%)	5 (5%)	
Job description [N (%)]				χ^2 (1, N=125)=0.28, $p=0.96$
Firemen/emergency rescue staff	50 (40.3%)	10 (41.7%)	40 (40%)	
Drivers	39 (31.5%)	8 (33.3%)	31 (31%)	
Medical staff	14 (11.3%)	2 (8.3%)	12 (12%)	
Technicians, IT & personnel in charge	21 (16.9%)	4 (16.7%)	17 (17%)	
Number of other traumatic events experienced [M (S.D.)]	1.96 (1.98)	2.16 (2.23)	1.91 (1.92)	$t(1\,2\,3)=0.56$, $p=0.58$