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The impact of disaster work on community volunteers: The role of peri-traumatic distress, level of personal affectedness, sleep quality and resource loss, on post-traumatic stress disorder symptoms and subjective health

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ABSTRACT

Disaster work has shown to cause PTSD symptoms and subjective health complaints in professional emergency personnel. However, very little is known about how disaster work affects community volunteers.

This first time longitudinal study examined factors contributing to post-traumatic stress disorder symptoms (PTSD) and subjective health complaints in volunteers working in an earthquake setting. At six and eighteen months post disaster, a sample of 506 Indonesian Red Cross volunteers were assessed using the Impact of Event Scale-Revised and the Subjective Health Complaints Inventory. Factors analyzed in relation to the outcomes included: peri-traumatic distress, level of personal affectedness by the disaster, sleep quality and loss of resources as a consequence of the disaster.

At 18 months post-disaster the findings showed high levels of PTSD symptoms and subjective health complaints. Quality of sleep was related to both outcomes but resource loss only to PTSD symptoms. Neither peri-traumatic distress nor level of affectedness by the disaster (external versus directly affected volunteers), were predictive of symptoms. This study indicates that characteristics of disaster work e.g. low quality of sleep, may be an important contributor to PTSD symptoms and subjective health complaints in volunteers.

1. Introduction

Approximately 13 million people volunteer for the International Red Cross and Red Crescent Movement worldwide, delivering services to vulnerable people with no expectation of financial or material gain. When a disaster strikes, these volunteers respond immediately and work for weeks or months on the disaster site. Their main tasks are to remove the deceased, rescue the trapped and/or injured, re-establish water and sanitation, distribute food and non-food items to the community, work in a public kitchen or aid warehouse, handle logistics, provide first aid and psychosocial support to the affected and locate missing community members (IFRC, 2014). Although most volunteers have been trained and prepared for these tasks, some of them are ad hoc volunteers, without any formal connection to the aid agency and when their contribution to the post-disaster relief work ceases, volunteers return to their homes sometimes with no further contact with the aid agency. To date, there is a paucity of literature on the impact of disaster work on volunteers, probably the largest group active in disaster work (Thormar et al., 2010). However, it is well established that working in disaster affected regions is strenuous on professionals such as police officers, fire fighters, humanitarian workers and the military (Cardozo et al., 2012; Chan & Huak, 2004; Chang et al., 2003; Fullerton, Ursano, & Wang, 2004; Galea, Nandi, & Vlahov, 2005; King, King, Foy, Keane, & Fairbank, 1999; Marmar et al., 2006; Morren, Yzermans, van Nispen, & Wevers, 2005; Norris et al., 2002;

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Witteveen et al., 2007) where the most commonly reported complaints are PTSD symptoms (Chan & Huak, 2004; Chang et al., 2003; Fullerton et al., 2004; King et al., 1999; Norris et al., 2002) and although less studied, subjective health complaints (Morren et al., 2005; Witteveen et al., 2007). The prevalence of PTSD symptoms has varied from 5% to 40% in this group (Galea et al., 2005) and studies vary considerably with respect to the nature of the disaster, relevant health outcomes and type of disaster work (Morren et al., 2005).

Several factors potentially affect the impact of disaster work on volunteers. First, if the volunteer is part of the affected community, he or she may have been personally affected and experienced considerable loss of resources. As examined by Hobfoll's Conservation of Resources Theory (COR) resource loss predicts psychopathology resulting from disasters and posits that resource loss is a major predicting factor after such events. The theory is based on a single underlying motivational component that implies that individuals will strive to obtain, retain and/or protect what they value and stress occurs when resources are threatened, lost, or investment of resources is not congruent with output. Consistent with this theory, studies on disaster survivors have found resource loss to be one of the strongest predictors of psychological distress (Benight et al., 1999; Hobfoll, 1991; Hobfoll, Tracy, & Galea, 2006; Hobfoll, Hall, & Canetti, 2012) but no study has looked at this in community volunteers who may be a selective group of disaster survivors.

Secondly, the exposure of community survivors to the disaster can elicit peri-traumatic distress which is the level of distress (intense fear, helplessness or horror) experienced during and immediately after an event and has been shown to be related to post-trauma psychopathology in community survivors after a disaster (Brunet, Boyer, Weiss, & Marmar, 2001; Norris et al., 2002), in police and other first responders (Marmar et al., 2006). However, recent studies have questioned the effect of peri-traumatic distress on PTSD development (Friedman, Resick, Bryant, & Brewin, 2011).

Thirdly, some of the volunteers may be indirectly affected by the disaster through their family, friends and neighbours being affected while other volunteers may come from neighbouring cities with no ties to the afflicted area. To our knowledge, the level of personal affectedness in disaster volunteers has not previously been examined in relation to PTSD symptoms or subjective health complaints but level of proximity to the area has previously been shown to predict symptoms of PTSD in disaster survivors (Wang et al., 2000). Furthermore, volunteers that encounter more distressing experiences during disaster work have been found to have higher levels of mental health problems and health care utilization (Morren et al., 2005).

Fourth, sleep disturbances can be common, especially in the first weeks following a disaster, when volunteers work in shifts and take turns resting and often work long hours in unsafe, physically demanding settings. This is done in order to make the best use of time so that secondary losses due to the disaster can be prevented, e.g. more loss of lives or property. In addition to this tents are often the only means of shelter or refuge for the volunteers, especially in developing countries, if they are available at all. Sometimes volunteers may resort to sleeping on the streets or in between humanitarian aid parcels. Because of this unfortunate scenario, many volunteers experience severe sleep disturbance and we assume this to be a potent risk factor for PTSD symptom development in the volunteers. Studies have repeatedly found that sleep disturbance is associated with greater risk for development of depression and anxiety (Breslau, Roth, Rosenthal, & Andreski, 1996; Chang, Ford, Mead, Cooper-Patrick, & Klag, 1997; Ford & Kamerow, 1989) as sleep is frequently disrupted in the aftermath of a traumatic event (Van Liempt, Vermetten, de Groen, & Westenberg, 2007). Recent literature suggests that disturbed REM or non-REM sleep can contribute to maladaptive stress and trauma responses and may act as a modifiable risk factor for poor psychiatric outcomes such as PTSD symptoms (Ford & Kamerow, 1989; Germain, 2013; Van Liempt, Westenberg, Arends, & Vermetten, 2011). Furthermore, the quality of sleep, associated with general work related stress, has been shown to be an important variable in the development of PTSD symptoms in police officers (Neylan et al., 2002).

Table 1
Yogyakarta volunteers' demographics.

	N	%
Gender	471	
Male	350	74.3
Female	121	25.7
Age	458	
35 and older	67	14.6
30–34 years old	56	12.2
25–29 years old	155	33.8
Younger than 25 years old	180	39.3
Education	410	
Junior high < 15 years old	20	4.9
Senior high < 18 years old	227	55.4
Post-senior high skill education	52	12.7
University education	111	27.1

Note: Data was missing on some demographics.

The aim of this study was to assess levels of PTSD symptoms and subjective health complaints in Red Cross volunteers working in Yogyakarta, Indonesia, in the aftermath of an earthquake in a longitudinal setting post six and eighteen months. Based on the above-mentioned literature, we assessed the contribution of demographics, peri-traumatic distress, level of personal affectedness by the disaster, quality of sleep and resource loss to psychopathology at 18 months. We hypothesized that peri-traumatic distress level of affectedness, reduced sleep quality and resource loss would be related to PTSD symptoms and subjective health complaints. Factors previously unstudied in this population. We also hypothesized that resource loss might be a mediator between peri-traumatic distress and post-traumatic stress symptomatology.

2. Method

2.1. Participants and setting

On May 27, 2006, at 5:53 AM, an earthquake of 6.3 on the Richter scale struck the provinces of Yogyakarta and Central Java. More than 6000 people were killed, 37,000 injured and hundreds of thousands lost their homes, with the overall damage estimated at 3.1 billion US$ (FAO, 2007). The Indonesian Red Cross (PMI) responded with community volunteers to attend to over 200,000 civilians as well as to remove the deceased. For this study, the PMI managed to track down 506 of the 877 of these volunteers. The volunteers are a diverse group of community members, some trained as PMI volunteers and others that joined in response to the disaster (see Table 1 for demographics).

2.2. Measures

Symptom levels of Post-Traumatic Stress were measured using the Impact of Event Scale – Revised (IES-R) (Weiss & Marmar, 1997) at 6 and 18 months, a self-report measuring subjective distress in the past 7 days in relation to a particular event. The 22 items correspond to 14 of the 17 DSM-IV symptoms of PTSD symptoms with a total score ranging from 0 to 88, with low scores indicating low distress. A cut-off score (at 33) was used to indicate high symptom levels of PTSD symptoms in this study (Creamer, Bell, & Failla, 2003). The IES-R demonstrated high internal consistency at both 6 months (Cronbach's $\alpha = .88$) and 18 months ($\alpha = .91$). This scale