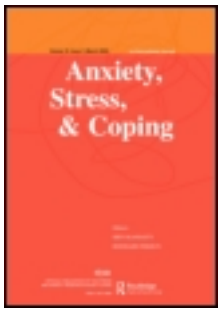

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Organisational factors and mental health in community volunteers: the role of exposure, preparation, training, tasks assigned and support

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ORGANISATIONAL FACTORS AND MENTAL HEALTH IN COMMUNITY VOLUNTEERS. THE ROLE OF EXPOSURE, PREPARATION, TRAINING, TASKS ASSIGNED AND SUPPORT.

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Abstract

During disasters, aid organizations often respond using the resources of local volunteer members from the affected population who are not only inexperienced, but who additionally take on some of the more psychologically and physically difficult tasks in order to provide support for their community. Although not much empirical evidence exists to justify the claim, it is thought that preparation, training, and organizational support limit (or reduce) a volunteers' risk of developing later psychopathology.

In this study, we examined the effects of preparation, training, organizational support and assigned tasks on the mental health of 506 Indonesian Red Cross volunteers who participated in the response to a massive earthquake in Yogyakarta, Indonesia in 2006. Controlling for exposure level, the volunteers were assessed for post-traumatic stress disorder (PTSD), anxiety, depression, and subjective health complaints 6, 12, and 18 months post disaster. Results showed high levels of PTSD and subjective health complaints up to 18 months post disaster, while anxiety and depression levels remained in the normal range. Higher levels of exposure as well as certain tasks (e.g. provision of psychosocial support to beneficiaries, handling administration or handing out food aid) made volunteers more vulnerable. Sense of safety, expressed general need for support at six months, and a lack of perceived support from team leaders and the organization were also related to greater psychopathology at 18 months.

The results highlight the importance of studying organizational factors. By incorporating these results into future volunteer management programs the negative effects of disaster work on volunteers can be ameliorated.

Keywords: disaster, volunteer, humanitarian, management, earthquake, PTSD

Organisational Factors and Mental Health in Community Volunteers. The Role of Exposure, Preparation, Training, Tasks Assigned and Support.

The number of disasters has increased more than fourfold in the past 40 years resulting in more severe effects on an increasing number of people (International Federation Red Cross/Red Crescent, 2002). Approximately 208 million people were affected by 373 natural disasters in 2010 and 296,800 people died (Centre for Research on the Epidemiology of Disasters, 2012).

When experiencing a massive disaster like the 2006 earthquake in Yogyakarta, a person is often filled with a feeling of helplessness, horror, and fears for one's safety. Individuals are exposed to multiple stressors including loss of relatives and friends, dead bodies, destroyed property, hazardous chemicals, physical injuries, and disfigurement all of which increases the strain they are experiencing. Separation from loved ones, including children, can go on for weeks. Relocation to temporary settlements or camps for internally displaced people can also be necessary, where sharing of facilities with multiple strangers results in ultimate lack of privacy. Collapse of infrastructure such as health care, schools, markets and/or government agencies is also common. This wide range of impact across multiple domains is more likely to generate a negative adaptive spiral than events with a more limited range of impact (Schnurr, Spiro, Aldwin & Stukel, 1998).

Research on emergency professionals, humanitarian delegates, and the military (hereafter referred to as professional emergency workers) responding to disasters has revealed negative psychological consequences (Cardozo et al., 2005; Chang et al., 2003; Fullerton, Ursano & Wang, 2004; Morren, Yzermans, van Nispen & Wevers, 2005; North et al., 2002; Spinhoven & Verschuur, 2006; Tak, Driscoll, Bernard & West, 2007; Witteveen et al., 2007). Post-traumatic stress disorder (PTSD) is the most commonly reported complaint (Chang et al., 2003; Epstein,

Fullerton, & Ursano, 1998; Eriksson, Van de Kemp, Gorsuch, Hoke & Foy, 2001; Fullerton et al., 2004; Gersons, 1989; Kaysen, Rosen, Bowman, & Resick, 2010; North et al., 2002; Perrin et al., 2007; Tak et al., 2007; Ursano & McCarroll, 1990), together with depression (Cardozo et al., 2005; Fullerton et al., 2004; Tak et al., 2007), subjective health complaints (Morren et al., 2005; Witteveen et al., 2007), and chronic fatigue (Morren et al., 2005; Spinhoven et al., 2006; Witteveen et al., 2007)**.** Many factors have been shown to be influential on the mental health of professional emergency workers such as level of preparation and/or training (Marmar, Weiss, Metzler, Ronfeldt & Foreman, 1996; Paton, 1994; Perrin et al., 2007), level of exposure to gruesome things (Epstein et al., 1998; Marmar et al., 1996) where both the amount (Eriksson et al., 2001; Marmar et al., 1996) and length of exposure (Kaysen et al., 2010) relate to the symptoms. Furthermore, job experience (Chang et al., 2003) and supervisor support (Tak et al., 2007) have been shown to have an impact on the symptoms. The evacuation of bodies is the only task studied to predict symptoms of PTSD (Ursano & McCarroll,1990).

Even though much of the rescue and recovery work is implemented by local professional emergency workers, the response contribution of volunteers is increasing (United Nations, 2007). In spite of having experienced some or all of these stressors, many community members choose to volunteer as an additional resource for the rescue operation. This is especially true in countries that are less developed in terms of disaster preparedness and response. Today, the Red Cross/Red Crescent Movement alone has approximately two million volunteers active in disaster work annually. There is paucity of literature on the impact of disaster work on community volunteers (For review see Thormar et al., 2010). This is a significant concern for disaster response programs with community volunteers often being the largest responding group and as members of the affected community they are likely to be more personally impacted by the disaster.

Community volunteers differ from professional emergency workers in numerous ways. One of the main differences is a lack of a formal job or task description. Since volunteers are often assigned the role of a supplementary resource, they are expected to adapt to the needs that may arise in the field and to be ready to take on those tasks that need to be done. Tasks that are not common for one´s occupation are more likely to result in symptoms of stress or PTSD (Perrin et al., 2007). This is often the case for the volunteer who must step out of his/her comfort zone and into settings that may be unfamiliar, unsafe, and physically demanding. Many community volunteers have had little experience, training, or preparation in disaster response.

Preparation and training such as mastering a skill (Marmar et al., 1996; Perrin et al., 2007) and having the right equipment, are important elements in feeling safe on the job. It has been shown that in circumstances of continuous threat, civilians who are able to re-establish a relative sense of safety have a lower risk of developing PTSD (Bleich, Gelkopf, & Solomon, 2003).Paton (1994) has shown that training can increase police officers' capacity to adapt to the circumstances they encounter and can contribute to their capacity to realize salutary benefits and gain a sense of personal and professional growth from their experience.

Community volunteers may also be deprived of certain organizational support structures that may exist within profession response groups such as police and emergency services. The volunteer often will work for a few days or weeks and then have no further contact with the humanitarian agency. This is especially true for volunteers who only respond to the emergency but have no other ties to the responding organization. Thus they are often left alone with a critical experience to resolve. Green, Lindy, Wilson, and John (1985) suggest that an individual working in a stressful and unsupportive environment may be more vulnerable to developing post traumatic stress after a critical incident than those in more supportive environments. Bennett and colleagues (2005) surveyed British ambulance personnel and found that organizational stressors

such as the unpredictable nature of the work are more important determinants of post traumatic stress, anxiety, and depression than stress associated with the incidents.

Given the devastation caused by disasters, it is of critical importance that intervention policy be based on the most up to date research findings. After an extensive search for a sound theoretical framework addressing organizational factors in a disaster setting, we were not able to find one. This gap in the research led us to an evidence informed framework for post–disaster psychosocial intervention. A panel of leading world experts in post-disaster interventions agreed upon five essential evidence informed elements upon which to base post-disaster intervention and prevention efforts. These are promotion of a sense of: 1. safety, 2. calming, 3. self- and community efficacy, 4. connectedness, and 5. hope (Hobfoll et al., 2007). Hobfoll and colleagues (2007) recommend that the principles be smoothly translated to various circumstances.
In the current study, we assessed the impact of responding to a large scale earthquake on the mental health of 506 Red Cross community volunteers working in Yogyakarta, Indonesia. Although some of the volunteers were already working for the Red Cross, new volunteers were recruited through local Red Cross chapters.

The study tracked these community volunteers and looked at their mental health six, 12 and 18 months post-earthquake, focusing on post-traumatic stress, anxiety, depression, and subjective health complaints as outcomes. Guided by three of Hobfoll´s elements; *sense of safety*, *calming,* and *connectedness,* we assessed the possible predictive value of: 1. Experience, preparation, and training as a measure of a *sense of safety*. 2. Exposure e.g. to grotesqueness, length of working hours, tasks assigned, and loss of resources such as losing one's home, loosing access to food and/or water, needing clothing, or suffering financial difficulties, as a measure of *calming*, and 3. Organizational support as a measure of *connectedness.*

We hypothesized that greater exposure (e.g. more loss of resources, and long working hours), certain tasks (e.g. the task of evacuating bodies, less experience, lack of preparation and training, as well as low organizational support) would be related to a higher number of complaints.

Method

Participants and study design

We examined how organizational variables influenced the mental health of community volunteers who responded to a massive earthquake measuring 6.3 on the Richter scale that struck the island of Java on May 27th 2006 at 5:53 AM local time in the provinces of Yogyakarta and Central Java. The epicentre was approximately 37.2 km south of Yogyakarta affecting 500 km^2 of the surrounding area. More than 5,700 people were killed, tens of thousands were injured and hundreds of thousands lost their homes. The Indonesian Red Cross –*Palang Merah Indonesia* (PMI) utilized 877 volunteers from seven surrounding branches to respond to the urgent needs of over 200,000 people severely affected by the earthquake including evacuating dead civilians and transporting these bodies to appropriate facilities. The volunteers were 74% male and 26% females, with 74% of them younger than 30 years old. Marital status showed that 77% percent of them were single and 27% of them had a university level education, 62% completed senior high school <18 years old, and 21% of them reported having no experience volunteering in a disaster.

Safety measures were put into place where the volunteers were briefed with information about the situation on the site, what to expect, tasks they would be asked to carry out and what sort of equipment they would have at hand. They were told to rely on the training they previously received or took part in a rapid version of otherwise extensive training programs. They were also provided safety gear related to their tasks and introduced to their team leaders. Once they were in the field though they were often on their own and had to rely on their own

judgement. Some of the volunteers were involved for fairly short periods of time, from days to a week, over the course of a mission that lasted two years. Upon completion of their volunteer time, they were provided information as to how to get help if they felt they needed it.

A draft questionnaire assessing anxiety, depression, subjective complaints and PTSD was created and piloted with 30 volunteers not related to Yogyakarta or Central Java (post-Tsunami operation of 2004). Their feedback, based on their own prior disaster experience, was used to develop a final questionnaire for the assessment of the Yogyakarta volunteers. The questionnaire was considered feasible and culturally translatable. Questions were added to the questionnaire after reviewing comments from the volunteers to allow for broader coverage of their experiences as well as for cultural adequacy.

To participate in the study, PMI recruited 506 (57% of those deployed) volunteers from seven different chapters in the Yogyakarta and Central Java area and a group from the capital Jakarta (N=80) who had been mobilized to Yogyakarta at the time of the disaster. The data were all coded allowing for individual as well as group follow up. At the second measurement point, post-12 months, the participation rate was 84% and post-18 months the participation rate was 78%. About 40% of the volunteers were still busy with the recovery efforts at 12 months.

Measures

Post-traumatic stress (PTS) symptoms were measured using the Impact of Event Scale – Revised (IES-R) (Weiss & Marmar, 1997). This is a self-report measure designed to assess current subjective distress for any specific life event. It has 22 items, which correspond directly to 14 of the 17 DSM-IV symptoms of PTS. The IES-R yields a total score (ranging from 0 to 88) and subscale means calculated for intrusion (range 0-32), avoidance (range 0-32) and hyperarousal (range 0-24). The answer categories range from 0 to 4 with low scores indicating low complaints. IES-R is not used to diagnose Post traumatic stress disorder (PTSD), however,

cut-off scores corresponding to a diagnosis of PTSD (cut-off at 33) are available (Creamer, Bell & Failla, 2003) and were used in this study. In this study, the IES-R demonstrated high internal consistency for the total scale (Cronbach's α = .88), and for the three subscales (intrusion: α = .79; avoidance: α = .70; hyper-arousal: α = .78) at six months. The scale is the most commonly used tool for measuring post-traumatic effects internationally (Elal & Slade, 2005) and for demonstrating adequate psychometric properties in Western and Eastern cultures (Lim et al., 2009; Perera-Diltz et al., 2009; Weiss, 2007).

Anxiety and depression were measured using the Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983).The scale contains 14 items divided equally into two subscales measuring states of anxiety (HADS-A) and depression (HADS-D). Items are rated on a 4-point Likert scale ranging from 1 to 4 (recoded from 0 to 3) giving a maximum score of 28 for each scale. Valid HADS subscale scores were defined as having answered at least five of seven items on both the HADS-A and HADS-D. In this study, the HADS demonstrated moderate internal consistency for the total scale (Cronbach's α = .71 for the 14 items), as well as for the anxiety subscale (α = .76) but was low for the depression subscale (α= .53) at six months.

Anxiety and depression in this sample were estimated using cut-off scores for the HADS that were empirically determined to facilitate classification of subjects having elevated anxiety and depression scores. For anxiety (HADS-A) and depression (HADS-D), raw scores of 8-10 identify a mild level of symptoms, 11–15 a moderate level and 16 or above a severe level (Zigmond & Snaith, 1983).

Subjective health complaints were measured using the Subjective Health Complaints inventory (SHC) scoring system (Eriksen, Ihlebaek & Ursin, 1999). This system consists of 29 questions concerning severity and duration of subjective somatic and psychological complaints and showed a high measure of internal consistency (Cronbach's α = .92 for the sample on the

total scale.). It yields scores on total number of health complaints categorized into five factors: musculoskeletal, pseudo-neurological, gastrointestinal problems, allergy, and flu (Cronbach's α = .85, .83, .80, .69, and .73 respectively). The system uses a 5-point Likert scale ranging from 0 to 4 on experience of a specific complaint in the last month, ranging from "not at all" to "seriously" (Eriksen et al., 1999). The inventory has shown similarity in different cultures (Ihlebaek, Brage, & Eriksen, 2007).

Exposure was measured using the occurrence subscale of the Traumatic Exposure Severity Scale (TESS) (Elal & Slade, 2005). The scale was developed specifically to assess dimensions of exposure to an earthquake in adults. It has 28 items, organized into five factors: Resource loss, damage to home and goods, personal harm, concern for significant others, and exposure to the grotesque. The occurrence measure was on a yes or no basis. Cronbach's alpha was calculated for the occurrence subscale. The alpha coefficients were: Resource loss = .76, Damage to home = .65, Personal harm = .66, Concern for others = .65, Exposure to the grotesque = .64, and total TESS = .83. The scores were coded as 1=experienced this and 2=did not experience this, but the value of 2 was re-coded into a value of 0.

Organizational variables were measured with a questionnaire designed specifically for this study (See Appendix 1). Five questions on preparation and training were measured on a 4-point Likert scale ranging from positive to negative, personal need for support was measured on a 11-point scale ranging from positive to negative, organizational support was measured on a 11-point scale ranging from positive to negative and support from team leaders was measured on a 4-point Likert scale. Tasks carried out during mission were measured with a yes/no question. According to the PMI, the volunteers' tasks were relatively stable throughout the mission.

Some questionnaires were translated and validated in Indonesian by the scale authors. Other were translated to Bahasa Indonesian by bilingual Indonesian psychologists who

specialized in trauma and then back-translated into English by a third party for verification of translations before the administration. Finally, before the first measurement point, the final questionnaire was piloted with 30 volunteers who had worked on the post-tsunami operations of 2004.

Statistical analysis

Descriptive statistics, General Linear Model (GLM) on the repeated measures and correlations along with multivariate regression analysis were used to answer the research questions. In the regression analysis the IES-R, the SHQ, and the subscales of the HADS, were used as dependent variables.

There are several dimensions that can impact a volunteer's mental health while working on a disaster recovery mission. In order of importance, we broke down the antecedents into five steps and entered them into a regression analysis: 1. Demographics (gender and age), 2. Exposure (loss of resources, concern for others during the emergency phase, exposure to the grotesque) and working hours per day. 3. Tasks assigned during the mission (assessment, logistics/warehouse, providing psychosocial support, delivering first aid, handing out food, administration, and evacuation of bodies). In the preliminary analysis, the tasks: Water and sanitation, distribution of relief, communication, blood transfusion, tracing and mailing, shelter and security were shown to have no effect in the model and were therefore excluded from the analysis. 4. Preparation and training (being provided information about the situation, personal safety, equipment received, training received, task description on mission), 5. Support variables (support from team leader, expressed need for support in general, support from PMI at the end of mission, recognition from PMI) (See Appendix 1). The assumption of multi-collinearity was not violated as the correlations between the independent variables were all well below r = .80, and tolerance was in all cases well above .200 (the range was .436 - .863).

In addition to no multi-collinearity, three assumptions of multiple regression for each of the four outcomes were assessed: First, the Durbin-Watson test of independence of errors was in all cases well above 1 and below 3 (the range was 1.73 - 2.22). Second, inspecting regression standardized scatterplot of the residuals and predicted values (zresid/zpred) for each outcome revealed no indication of heteroscedasticity. Finally, the normal plot of the regression standardized residuals showed in all cases that the errors were sufficiently close to a normal distribution.

Results

The majority of the volunteers were male, single, and less than 30 years old. Most of them had a senior high educational level (<18 years old) and prior experience working in disasters. Furthermore, 37% of the volunteers were directly affected and living in the area and about 33% came from outside the area, but were linked with the affected community through family and friends. The last 30% had no links with the affected community and were living elsewhere. There were no differences in the mental health outcomes between these three groups. Islam was the religious background of 93% of the volunteers. About 50% of the volunteers had their home damaged in the earthquake, 5% were physically injured, 5% were buried under rubble for a period of time and 25% had a family member buried under rubble. Approximately 60% reported being exposed to dead bodies or body parts during the rescue operation and 34% were exposed to cries for help from trapped individuals. Almost 28% reported losing friends in the earthquake and about 3% lost immediate family members.

Mental health outcomes

Means were calculated for all of the mental health outcomes over time and are presented in Table 1. Levels of PTSD in this sample were high and even though PTSD symptoms

decreased significantly over time, 23% qualified for clinical levels of PTSD at 18 months. About 58% classified as mild cases of anxiety at 18 months, whereas only 8% presented moderate levels. This is similar to what has been found in the general population of young Southeast Asians (World Health Organization, 2008). Approximately 4 % of the volunteers reported moderate levels of depression at 18 months. This is also similar to or slightly lower than findings in the general population in Southeast Asia (World Health Organization, 2008).

INSERT TABLE 1

Factors at six months, affecting mental health outcomes at 18 months

The hierarchical regression model was divided into five steps with demographics as the first step, exposure to the disaster as the second step, tasks assigned during mission as the third step, preparation and training as the fourth step, and support variables as the fifth step.

PTSD symptoms - Gender and age, showed no significant effect on PTSD symptoms (Table 2). With regards to exposure, loss of resources, showed a significant effect on PTSD symptoms. The tasks of providing psychosocial support and food aid to the affected community were also significant contributors to symptoms. With regard to preparation and training, worries about personal safety were the most significant contributing factor. Those that expressed the largest need for support at six months had high symptoms at 18 months. In total, the model explained 26.7% of the variance for PTSD symptoms.

Anxiety - Age had an effect on anxiety with youth being predictive for higher anxiety (Table 2). All exposure variables were related to anxiety but none of the tasks performed had an effect on anxiety. Anxiety increased significantly in relation to lack of information received about the situation and feeling that not enough safety measures were in place at the start of the mission. Concern about the quality of equipment received also contributed significantly to an increase in symptoms. Expressed high need for general support at six months and low support

from team leaders during the mission resulted in higher anxiety. In total, the model explained 32.9% of the variance for anxiety symptoms.

Depression - Gender had a significant effect on depression where being male was predictive of higher depressive symptoms (Table 2). None of the exposure variables were related to depression, but the tasks of providing psychosocial support to the affected, food aid, and handling administration were impactful. No significant effect was found for preparation and training on depressive symptoms. High need for support and lack of support from the organization in the aftermath were the strongest contributors to higher depression. In total, the model explained 21.5% of the variance for depressive symptoms.

Subjective health complaints - Gender and age showed no significant effect on subjective complaints (Table 2) but from the exposure variables hours working showed a significant relation to symptoms. There was a significant correlation between carrying out assessments and lower subjective complaints but handling administration resulted in increased complaints. No effect was found for preparation and training on subjective health, but a significant correlation between lack of support from team leaders at six months, and more subjective symptoms was found. In total, the model explained 26.8% of the variance for subjective health complaints.

INSERT TABLE 2

Discussion

In this longitudinal study, we assessed the mental health impact of a large scale earthquake on 506 Red Cross volunteers working in Yogyakarta, Indonesia, six, 12 and 18 months post-earthquake focusing on post-traumatic stress, anxiety, depression and subjective health complaints as outcomes. Guided by three of Hobfoll et al., (2007) elements; *sense of safety*, *calming,* and *connectedness* we assessed the possible predictive value of: 1. Experience,

preparation, and training, as a measure of a *sense of safety*. 2. Exposure (to grotesqueness, length of working hours, tasks assigned, and loss of resources) as a measure of *calming*, and 3. Organizational support, as a measure of *connectedness.*

We hypothesized that greater exposure (e.g. the task of evacuating bodies, more loss of resources, and longer working hours), less experience, lack of preparation and training as well as low organizational support would be related to higher levels of complaints. Loss of resources was the strongest contributor to symptoms. Contrary to our expectations, the task of evacuating bodies was not related to symptoms but the tasks of providing psychosocial support, handling administration or handing out food aid were strongly related to symptoms (Table 2). Although we expected the more experienced volunteers to have lower symptoms, this was not borne out in the regression analysis. The same applied to those who felt less trained. However, preparation in terms of good information about the situation, quality of equipment to be used and proper safety measures in place was important. According to our hypothesis, expressed need for support and lack of received support from team leaders and the organization were found to be related to more psychopathology in the volunteers.

Demographics

Gender played a surprising role with results showing more depressive features in men than women. This is not in line with the literature on gender differences in depression (Nolen-Hoeksma, Larson & Grayson, 1999; Piccinelli & Wilkinson, 2000) and might be explained by cultural factors like lower acceptance of expressed strong emotions leading to greater internalization of them. In a community already high on unemployment the disaster also eliminated many jobs (e.g. 30% unemployment rates) (FAO, 2007) and, therefore, it is also possible that males felt more hopeless in a community where it is expected that they will be the

main provider. A study by Dewi, Weinehall, and Öhman (2010) on Javanese perceptions of health confirmed that gender roles in the Javanese culture are still quite traditional and hence the lack of a job may more significantly impact the male. Role loss has been found to predict distress in displaced people (Miller, Muzurovic, Worthington, Tipping, & Goldman, 2002) in part because roles give meaning and structure to people's lives (Lavik, Hauff, Skrondal, & Solberg, 1996) and promote a sense of competence and self-esteem (Kivelae, 1997).

Dewi et al., (2010) also found that respect for community leaders is grounded in people's appreciation of leadership in community activities.Many of the volunteers in the current study may well be seen as community leaders who are expected to make decisions in order to solve the problems of their community. Consequently, when a disaster strikes a Javanese community, the pressure on and expectations of the male volunteers to make the right decisions and solve the problems could increase significantly. Further research should be conducted in order to more clearly ascertain the factors contributing to more depressive symptoms in males.

Gender was not a risk factor for PTSD in this sample. Gender differences as a risk factor for PTSD are often found in community samples (Carr et al., 1995; Olff, Langeland, Draijer & Gersons, 2007) where females have more symptoms, but these differences are not commonly found in police and military samples (Engelhard, van den Hour, Weerts, & van Doornen, 2009; Iversen, et al., 2008; Lilly, Pole, Best, Metzler & Marmar, 2009; Souza et al., 2011). It can be assumed that the sample in this study resembles police and military samples where the subjects have offered themselves for a task that is known to be emotionally challenging and thus they may have some form of resilience, especially the females.

Age had an effect on anxiety with the youngest volunteers showing the most anxiety. The same has been observed in professional groups in the past (Witteveen et al., 2007). Young age may also indicate less experience. Even though the regression didn't show an effect of

experience on anxiety, a correlation between age and prior experience showed that the youngsters had significantly less experience (.141, which is significant at the .01 level).

Exposure

The exposure variable, loss of resources, seemed to be the most influential. It is strongly related to symptoms of PTSD and anxiety at 18 months. Loss of resources has been shown to predict symptoms of distress in several studies (Benight et al., 1999; Hobfoll et al., 2006; Sattler et al., 2006). It has also been shown that those who have few resources are most affected in the emergency phase and continue to be more vulnerable in the aftermath of the disaster (Heir & Weisaeth, 2008).

Being concerned for others in the immediate aftermath was related to anxiety levels at 18 months as was being exposed to grotesqueness. The volunteers in this study, typical for volunteers in Asian countries, are a part of the affected population and those most affected (e.g. by loss of resources, concern for others, exposure to grotesqueness) have more symptoms. This may prompt humanitarian organizations to focus on tracing relatives of volunteers as well as giving back some resources, as a priority to enhance the volunteer's health and well-being. Reuniting family members and tracing missing relatives are all important measures that promote a sense of safety and calming.

Even though direct exposure may be hard to prevent, working hours can be controlled. Working long hours is clearly related to anxiety and subjective health symptoms at 18 months. The number of working hours per day should be kept to around 8-10 hours, even in the immediate aftermath although this may be a challenge especially in the emergency phase when volunteers sense of urgency about the response can cause them to overwork themselves.

Tasks assigned during mission

Interestingly, it was found that providing psychosocial support (PSS) to victims was a vulnerability factor for PTSD and contributed to depression in the volunteers at 18 months. This may be due to secondary traumatisation (Hendron, Irving & Taylor, 2011) or the fact that the volunteers did not have enough training for the task (Cyr & Dowrick, 1991). Narratives about the events likely cause the volunteers to relive some of them especially because they themselves may have been affected by the disaster. This is in line with the literature from other types of volunteer work, such as working with AIDS patients (Maslanka, 1996) and crisis line volunteers (Cyr et al., 1991), where the volunteers showed signs of burnout from being exposed to extensive stories and personal tragedies. This may suggest that volunteers working on psychosocial support might need a specific form of intervention aimed at reducing symptoms of PTSD and depression or training should be prioritized so they can cope better with the exposure to extensive stories and personal tragedies. These are all good ways to promote calming (Paton, 1994).

One of the most difficult tasks, evacuation of bodies, was not related to any of the outcomes. This is not in line with other studies that have found body handling to be predictive for PTSD (Labbate, Cardena, Dimitreva, Roy & Engel, 1998; Ursano & McCarroll, 1990). However, in this sample, the finding may be due to cultural and religious factors of the Javanese. In this culture, it is considered very important that bodies of the victims be buried properly, and prepared and prayed for in the ways of their respective religions. In Islam, it is considered a source of great comfort for surviving loved ones if the bodies of the deceased are buried within 24 hours after death. Retsikas (2007) studied a community in East Java which has a similar traditionalist perspective of Islam. He found that the commemoration of the dead forms a central obligation for all Muslims which falls upon both the descendants of the deceased and his/her neighbors. He called it 'brotherhood' of death. They see themselves as fulfilling a religious

obligation as good Muslims, a factor that might have caused the volunteers in Java to see the action of evacuating dead bodies as giving them benefits now and in the afterlife. This perceived gain or inner calming may insulate them from the higher risk of psychopathology.

Unexpectedly, being assigned to handing out food aid was found to be a vulnerability factor for PTSD symptoms and depression. This may be due to the disparity between the needs of the impacted community and the limited supplies available in the emergency phase of the disaster. Volunteers may have been exposed to anger and aggression as well as a perceived lack of gratitude which has been shown to be a vulnerability factor for depression (Emmons & McCullough, 2004).

Those who were assigned to handling administration were also at risk for depression and subjective complaints. Administration may have been one of the more unpopular tasks which often exposed the administrators to hostility and lack of appreciation for the important task they are carrying out, namely keeping the operation running in the background. Since these underappreciated tasks are still essential a possible remedy may be to rotate volunteers through less "grateful" tasks and more "rewarding" tasks. Tasks that may be exposed to less gratitude than others (e.g. working on administration) also deserve the special attention of the organization. The volunteers assigned to those tasks are working under a lot of pressure from the affected community and donors, but their role might not be seen as saving lives, and thus might receive less attention and gratitude. Still they are an integral part of the operation, exposed to most of the same stressors, and carry a lot of responsibility.

Those who conducted assessments showed lower levels of subjective health symptoms. As subjective health may be both a physical and mental health outcome this may reflect that those conducting assessments had less physically difficult tasks than the other volunteers.

Preparation and training

It can be seen from this sample that for the volunteer, feeling safe is one of the most important preparation variables. Search and rescue, hazardous situations, handling bodies, distribution of relief, dealing with communities fighting for their survival, and potential epidemics, all call for proper personal safety measures to be in place. Lack of such measures or subjective feelings thereof facilitated symptoms of PTSD and anxiety, where sense of safety, information about the situation and quality of equipment were the most influential variables. Grieger, Fullerton & Ursano, (2003) found that even a relative sense of safety can reduce the likelihood of developing PTSD.

Provision of good information, proper protective equipment such as good shoes, gloves, helmets, and facial masks should be a standard requirement for all volunteers who are sent out for disaster work. Investing in proper equipment is likely to result in better physical and mental health of the volunteer.

Although training is usually assumed to be a key variable in emergency response (Marmar et al., 2006; Paton, 1994; Perrin et al., 2007), level of training did not significantly correlate with symptoms in this sample, but this may be due to problems with the question. It is possible that the question was misunderstood and the participants may have felt they were being asked about the training received at the start of the mission (which was in most cases non-existent due to time constraints and the extent of the emergency). Consequently, further research into this variable is suggested.

Organizational support

A good way to promote feelings of connectedness is by providing increased organizational support. Need for general support at six months was measured, and revealed some interesting findings - namely, those who expressed the highest need for support at six months had

the highest symptom levels of PTSD, anxiety and depression at 18 months. This may indicate that measuring need for support at six months can predict who may be vulnerable to long term complaints. Even though support from the organization is important throughout, these findings reveal that lack of support early in the mission could be related to increased symptoms of anxiety, depression and post traumatic stress later in the aftermath. It could also simply reflect the fact that those with the most symptoms have the greatest need for support early in the mission and even though support may be good in general, it may not be enough for those with the most symptoms. The relationship of support to depressive symptoms showed that feeling unsupported by the organization in the aftermath of the immediate disaster is related to higher symptoms of depression. As the operation moves from the emergency phase into the recovery phase support from the organization to volunteers might decrease. This may indicate that later interventions might be appropriate for certain groups of volunteers. Team leaders seem to be important support units within the operation and those who were very unsatisfied with the support they received from their team leader at six months showed more symptoms of anxiety and subjective health complaints at 18 months. Team leadership during disaster work should not just focus on keeping the operation going, but also keeping the volunteers healthy and enhancing their feeling of belonging to a community of helpers as well as a connectedness to the organization. Further study is needed to ascertain the essential variables in this situation.

Organizational support should be reinforced and support to the volunteers integrated in the training of team leaders. As this study shows, when adequate support is not provided negative outcomes ensue. This may be done by providing encouragement, positive feedback, accommodations, and good psychosocial care (e.g. stress reducing activities) and medical care for the volunteers as well as proper follow up of complaints.

It is clear in this study that volunteers who are most highly exposed to the disaster, especially in terms of resource loss, are the most vulnerable. There is not much that an organization can do to prevent exposure of their volunteers to loss or grotesqueness, but whether they are able to compensate for that in some way during the operation, and in the immediate aftermath is another question. As can be seen in Appendix 1, on a scale of 0-10, about 19% scored 8 or higher for needing support at the end of their mission, where a 10 indicated an urgent need. For organizational support, 38% scored higher than an 8 for feeling well-supported by the PMI and 83% scored higher than 6, so the support in general seemed to be good. Still, there may be a subgroup of volunteers who, due to special vulnerabilities, might need increased support.

In general, psychosocial support of humanitarian organizations needs to be strengthened (Ehrenreich & Elliott, 2004) and should implement a strong element of self-care and have an integrated structure of organizational support for the volunteers. Psychosocial support programs would benefit from further exploring the particular elements within volunteer management that might make some groups of volunteers especially vulnerable.

In conclusion, this study shows the effects of organizational variables; exposure, tasks carried out, preparation and training as well as support of volunteers working on a disaster response in a developing country. The findings show that greater exposure, certain tasks, not feeling safe on the job, lack of proper equipment, and lack of support from team leaders and the organization are related to more psychopathology in the long term. In order to assist volunteers in maintaining optimal mental health, organizations should minimize exposure by managing working hours, fluctuating tasks between those that provide low and high reward, supplementing lost resources (e.g. sleeping facilities), providing proper equipment that takes into account the volunteers safety, and strengthening organizational support. In addition, specific interventions may need to be developed for volunteers working on psychosocial programs.

Even though the Indonesian Red Cross is well known for their excellent volunteer management, it is hard to avoid any impact on the volunteer faced with such challenging tasks. Humanitarian organizations that strengthen their own resources, namely their volunteers, by looking after their health and well-being, maximize the recovery efforts and positive impact.

Levels of PTSD in this sample were high throughout the course of the study and even though they decreased significantly over time, 22.72% maintained clinical levels at 18 months. Moreover, many volunteers may have experienced symptoms that failed to meet the cut off score but were nonetheless disturbing or even debilitating. Screening, and early intervention with these volunteers is important in terms of their general well-being otherwise symptoms are likely to contribute to adjustment problems in their family, social life and even in work settings at the end of their volunteer mission (Zatzick, Weiss & Marmar, 1997). It is a challenge to control for all the confounding variables that might come into play over such an extensive period of time. There is evidence that negative life change in the year following disaster response fully mediates the relationship between disaster response and symptoms of depression and partially mediates the responses between disaster response and posttraumatic stress and anxiety symptoms (McCaslin et al., 2005).

Hobfoll at al. (2007) is the only current resource that attempts to recommend guiding principles post-disaster by calling them evidence informed rather than based. This study has provided insight into elements in volunteer management that in spite of challenges in disaster operations may need further attention. It is one step towards showing that the Hobfoll et al. (2007) approach may be insightful enough to qualify as evidence based approach. It is recommended, that these findings be considered within future revisions of the Inter Agency Standing Committee (IASC) Guidelines on the mental health of volunteer and professional disaster workers (Inter-agency standing committee, 2007).

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Appendix 1:

The following preparation and training variables were measured on 4-point Likert scale ranging from (1=very good, 4 very bad):

How did you think your preparation was before going to Yogyakarta in terms of:

- Information about the situation in Yogyakarta?
- Your personal safety regarding the earthquakes and Mount Merapi eruption?
- Equipment received?
- Training you received before doing this work?
- Information about what you could expect as your tasks in Yogyakarta?

An 11-point Likert scale was used to measure the following variables:

After you returned home from your mission how would you rate your need for psychological support? (0=did not need it, 10=urgently needed it)

How supported did you feel by the Red Cross after your volunteer work? (0=very well supported, 10=not supported at all).

How satisfied did you feel with the support you received from your team leader in Yogyakarta? (measured on a 4-point Likert scale ranging from very satisfied to very unsatisfied).

Table 1. Overview of Psychopathology over Time

	6 months	12 months	18 months	
	M	M	M	*p*
PTSD	25.97[a]	24.20	22.72[a]	.001***
Avoidance	9.04	8.48	7.92	
Hyper arousal	8.94	8.16	7.74	
Intrusion	7.28	6.40	6.64	
Anxiety	6.07	5.48	5.94	.223
Depression	4.58	4.13	4.28	.069
Subjective complaints	19.90	18.26	19.78	.687
Flu	2.29	1.98	2.03	
Musculoskeletal	7.15	6.58	7.47	
Pseudoneurology	6.26	5.40	5.69	
Gastrointprobl	3.89	3.54	3.71	
Allergy	1.27	1.23	1.36	

Note: Means that share the same subscripts differ significantly ($p < .01$) (a=**).

Table 2. *Hierarchical Multiple Regression Analysis Predicting the Outcomes at 18 months*

	PTSD		*Anxiety*		*Depression*		*Subjective health complaints*	
R^2 Step 1	.003		.021		.031		.032	
R^2 Step 2	.078		.107		.061		.091	
R^2 Step 3	.158		.154		.124		.178	
R^2 Step 4	.211		.231		.157		.223	
Step 5	B	**β**	B	**β**	B	**β**	B	**β**
Demographics:								
Age	-.02	-.01	-.05	-.17*	-1.63	-.27	-.18	-.08
Gender	-2.58	-.09	-.18	-.05	-.04	-.09**	1.86	.06
Exposure:								
Loss of resources	1.03	.16*	.17	.19**	.20	.14	.96	.14
Concern for others	.86	.10	.20	.17*	.07	.04	.10	.01
Grotesque exposure	1.07	.11	.33	.25**	.06	.03	1.05	.10
Hours working	.72	.11	.14	.17*	-.07	-.05	1.28	.19*
Tasks assigned:								
Assessment	2.10	.08	.08	.02	.38	.07	6.79	.25**
Logistics/warehouse	-1.16	-.04	-.45	-.12	.05	.01	-3.00	-.10
Providing PSS	-13.93	-.25***	-.64	-.08	-1.85	-.15*	-3.03	-.05
First aid	1.94	.07	-.11	-.03	.31	.05	-3.44	-.12
Evacuation	1.84	.06	-.26	-.06	.21	.03	2.57	.08
Food aid	-6.07	-.19**	-.51	-.12	-1.14	-.17*	-4.61	-.14
Administration	-.07	-.00	-.47	-.11	-1.08	-.16*	-5.06	-.17*
Preparation and training:								
Team leader	-2.76	-.07	-.13	-.03	-.71	-.09	-5.51	-.14
Prior experience	1.77	.10	.33	.13	.20	.05	2.42	.12
Information on situation	-.39	-.02	-.64	-.25***	.03	.01	-1.20	-.06
Personal safety	4.44	.22**	.71	.26***	.56	.13	3.31	.16
Equipment recieved	-2.06	-.12	-.46	-.20*	-.17	-.05	-.67	-.04
Training recieved	.54	.03	-.24	-.10	-.07	-.02	-1.30	-.07
Task description	.69	.03	.28	.10	.40	.09	.40	.02
Support:								
Support from teamleader	-.11	-.00	.84	.23**	.45	.08	4.71	.17*
Need for support	.96	.21**	.12	.19**	.17	.17*	.57	.12
Support PMI post	1.10	.16	-.02	-.02	.31	.21*	.69	.09
Recognition PMI	-.23	-.04	-.11	-.13	-.21	-.15	-.80	-.12
R^2	.27		.33		.22		.27	
F	2.53***		3.42***		1.90**		2.43***	
dfs	24, 191		24, 191		24, 191		24, 183	

*$p < .05$, **$p < .01$, ***$p < .001$