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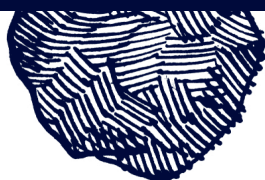
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Sigríður Björk Þormar completed her Bachelor of Science degree in nursing to become a registered nurse in 1994. She worked in the area of emergency services for 7 years both as a nurse in the emergency unit at the Landspítali University Hospital in her birth town of Reykjavík, Iceland and as a teacher in the school for paramedics in Reykjavík.

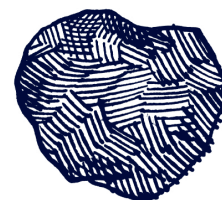
She took on the role of a national co-ordinator for first aid and psychosocial services at the Icelandic Red Cross where she was responsible for the continuous training of the Icelandic public, various professional groups working in emergency services, teachers and pool and sports hall staff. In 1999 she started her psychology studies for BA in psychology at the University of Iceland and finished her Masters degree in Health Psychology at Leiden University in 2003.

Sigríður has been a delegate for the International Federation of the Red Cross and Red Crescent Societies (IFRC) for 15 years and has trained in the area of psychosocial support in over 25 countries around the world. Sigríður was the main author on the IFRC training material for training of trainers for Community based Psychosocial Support and is one of the main consultants for the IFRC Reference Center for Psychosocial support. She has conducted assessments for the IFRC and developed program plans for national societies after some of the major critical incidents or disasters of recent time e.g. the 2004 Tsunami in Indonesia, the 2010 Haiti earthquake and the 2012 Uganda Ebola outbreak.

Currently Sigríður has her own practice in Reykjavík as well as working on humanitarian assignments as a member of the IFRC Emergency Response Unit roster for health and psychosocial support.

VOLUNTEERING IN THE AFTERMATH OF DISASTERS

SIGRÍÐUR BJÖRK ÞORMAR



VOLUNTEERING IN THE AFTERMATH OF DISASTERS

PSYCHOPATHOLOGY
AND VOLUNTEER
MANAGEMENT

SIGRÍÐUR BJÖRK ÞORMAR



Volunteering in the aftermath of disasters

Psychopathology and volunteer management

Sigríður Björk Þormar

Voor mijn twee geweldige zoons Sigurður Hrannar en Tómas Atli

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Psychopathology and volunteer management

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad van doctor

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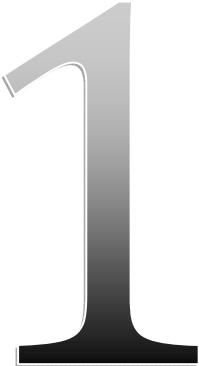
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Chapter 1 Introduction



How it all started

Working as a delegate for the International Federation of Red Cross and Red Crescent (IFRC) for the last 15 years has brought me to places and situations most people will never be able to experience. Some of these experiences have been horrifying beyond the scope of my imagination and others have been enriching, joyful, meaningful and inspirational. On each and every one of these missions, I have had the pleasure to work with humanitarian volunteers and experience their dedication in extreme circumstances, as well as their resilience and concerns.

This dissertation is borne out of my personal experience as a delegate in January of 2005, after I was sent, with short notice, to Banda Aceh in Indonesia after the Asian Tsunami hit its coast early on the morning of the 26th of December 2004. My task on this mission was to provide psychosocial support training to Indonesian psychologists and volunteers. Upon arrival in Banda Aceh all I could see was endless devastation, except for the pockets of nature that remarkably endured through forces of its own. Palm trees were sticking out in areas where there used to be neighborhoods, houses, schools, community buildings. All I could see now was rubbish, water and personal belongings scattered around, with people picking them up in the hope they may belong to them. Children were wandering about unaccompanied and scared of incoming strangers speaking a foreign language. There were body bags, bodies without bags and human limbs out of place in the middle of a pile of rubbish in the burning heat. The trash services were not working and trash kept piling up. There were many aid packages, with nowhere to go except to be left on the ground. The water and sanitation system had collapsed and the toilets that once flushed were now overflowing and the stench from all this overwhelmed me.

One morning I was taking a short rest and watching all the hard working young people, carrying out difficult tasks. Although I had always worked with volunteers before, this time due to the extensiveness of the disaster, they were very visible; they were everywhere, thousands of them. They walked around with limited equipment, vests that identified them as Red Cross volunteers, wearing dirty, torn facemasks or covering

their face with a cloth to avoid the stench. I started to wonder what happens to them when this tragedy has been resolved? Are they followed to see how they are coping and does someone pay attention to whether they might develop serious psychopathology?

As I returned to The Netherlands I could not let go of these thoughts and started to ponder these questions. After speaking to several key people within the humanitarian sector I realized that this topic was not being studied and doing so would be of great value.

With the backing of the IFRC and national societies from Iceland, Austria, Netherlands and France, I pursued this idea.

At first, we aimed to study Tsunami volunteers, but negotiations with the Indonesian Red Cross – Palang Merah Indonesia (PMI) took time and as we headed for Indonesia to carry out the pilot study, by co-incidence, another major natural disaster hit Indonesia while we were there. The PMI responds to most of the crisis across Indonesia and in 2014 alone, the volunteers responded to 248 events. An earthquake with a magnitude of 6.3 on the Richter scale struck the surrounding community of Yogyakarta, on the Island of Java, at 05:54 local time on 27 May 2006, causing extreme and widespread destruction. Thus, in order to have less delay measuring psychopathology in the volunteers we turned our focus towards the volunteers working on the recovery of the Yogyakarta earthquake.

Villages in more remote areas south of Yogyakarta, in Bantul and its surrounding areas were the most affected. The official figures remain at 5,749 people killed, with more than 38,000 injured and more than 127,000 houses completely destroyed and an additional 450,000 houses damaged. It is estimated that 1,173,742 people were made homeless and over 3 million were affected in some way by the earthquake (Operations update: Yogyakarta earthquake, 2010).

The PMI immediately responded with 877 volunteers who chose to register and work on the recovery under the emblem of the Red Cross. The volunteers worked side by side with the Indonesian army and other humanitarian organizations. In the early days

of the operation, a needs assessment with communities was carried out concurrently with relief operations to determine the starting point for the early recovery program. The program began with an emergency relief phase lasting five months, involving different sectors. This featured the distribution of relief goods, provision of first aid, medical services and logistics, emergency water and sanitation followed by well cleaning and deepening of the wells. Psychosocial support was a component integrated into different sectors, as well as a stand alone concept. Almost all of this work was carried out by PMI volunteers working long days in harsh conditions. Although volunteers exist within different humanitarian organizations, I have directed my focus on volunteering within the International Federation of Red Cross and Red Crescent (IFRC), since it is the world's largest volunteer based humanitarian organization. This study is conducted with Red Cross volunteers and supported by the IFRC.

1.1 Disasters

The IFRC being one of the largest operational organizations covering disasters worldwide, has defined the term disaster as:

“A sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, economic or environmental losses that exceed the community's or society's ability to cope using its own resources. Though often caused by nature, disasters can have human origins” (International Federation of Red Cross - What is a disaster, 2014).

In this dissertation I will focus mainly on natural disasters. Disasters may not only cause loss of life but loss of social networks, infrastructure and livelihood, sometimes permanently. Furthermore, they can force people to have to relocate where there are little financial or social resources, and they may find themselves in large reception centers, surrounded by hundreds of strangers and deprived of privacy and the level of hygiene they were used to.

When a disaster strikes, communities are reliant on speedy responses in order to prevent further loss of lives, livelihood and resources. With good disaster preparedness in place, professional rescuers are quick to respond but where disaster preparedness is not highly developed the response time can be long and professional resources may be scarce. Volunteers are a valuable resource in providing a timely response, and are particularly important in less developed communities where they may even be the main source of rescue and recovery.

1.2 What is a volunteer?

For all subsequent references in this dissertation, below is the chosen definition of volunteerism from the European Volunteer Centre:

“VOLUNTEERISM: refers to all forms of voluntary activity, whether formal or informal, full-time or part-time, at home or abroad. It is undertaken of a person's own free will, choice and motivation, and is without concern for financial gain. It benefits the individual volunteer, communities and society as a whole. It is also a vehicle for individuals and associations to address human, social or environmental needs and concerns. Formal voluntary activities add value, but do not replace, professional, paid employees” (European Volunteer Centre, 2014).

1.2.1 Volunteerism within IFRC in a historical context

Volunteer action has been part of the Red Cross and Red Crescent Movement since their inception. In 1859, a young Henry Dunant witnessed tragic scenes when passing a battlefield in Solferino, Italy, where local and foreign soldiers lay dying from their injuries. The first act of volunteerism occurred when Dunant impartially offered assistance to the wounded and dying. Dunant could not forget what he had seen and in 1862 he published the book *A Memory of Solferino*, which led several years later to the founding of the Red Cross (Dunant, 1986).

In his book he wrote: “Would it not be possible, in time of peace and quiet, to form relief societies for the purpose of having care given to the wounded in wartime by zealous, devoted and thoroughly qualified volunteers“(pp. 115).

“For work of this kind, paid help is not what is wanted... There is need, therefore, for voluntary orderlies and volunteer nurses, zealous, trained and experienced, whose position would be recognized by the commanders or armies in the field, and their mission facilitated and supported” (pp. 124).

These words were to become the foundation on which the Red Cross and Red Crescent Movement grew; spreading from country to country as local people came together, founded a society, elected a volunteer governance board and started to recruit volunteers. Over time the Movement has evolved from operating exclusively in conflict situations to dealing with natural disasters, food shortages and other social challenges, with the core of the work still being carried out through a global network of local volunteers, in the spirit of Dunant.

At present, these same volunteers are at the heart of effective humanitarian assistance for millions of vulnerable people world wide, defining the Movement as an unparalleled humanitarian organization.

It is important to study the impact of volunteering on mental health, particularly since the number of volunteers has decreased in recent years. The Institute for Volunteering Research in the UK published a survey on all aspects of general volunteer work (non-disaster related) in 2007 which revealed among other things that the average number of hours per volunteer spent volunteering declined by 30% between 1997 and 2007 (Low, Butt, Paine, & Smith, 2007) and older surveys show that from 1988 to 1998 in the Red Cross and Red Crescent Movement the numbers rapidly declined (International Federation of Red Cross - Volunteering Policy, 2002).

1.2.2 The value of volunteers

Although people volunteer all over the world, no satisfactory registry of worldwide volunteers exists. The IFRC works with approximately 20 million active volunteers yearly, many of whom are directly involved in disaster work (Volunteering policy, 2002). To show the importance of volunteerism a Eurobarometer survey in 2006 revealed that 3 out of 10 Europeans claim to be active in a voluntary capacity and that

close to 80% of respondents feel that voluntary activities are an important part of democratic life in Europe (European Volunteer Centre, 2014).

Volunteers have a natural credibility with beneficiaries, donors, government officials, and others for the mere reason that they are not paid staff and thus hold no financial interest in what they may be advocating.

Volunteers vary greatly in terms of age, ethnicity, social background, income, educational level, etc. which gives an even greater distinction to their individual motives. They increase the feeling of community ownership of solutions by being directly involved in some of the decision making processes on behalf of the individuals most impacted. When working on tasks that affect people's quality of life, volunteers empower themselves by improving their own neighborhood, which can create a motivation for them to contribute in a time when they may otherwise feel overwhelmed and helpless due to external circumstances. From being passive members of society they at least started becoming active actors (Gillette, 2003).

Countless voluntary sector organizations depend heavily on work executed by volunteers. Volunteering stimulates new and innovative partnerships between businesses, public authorities and volunteer organizations. By volunteering, less active community members are increasingly securing their own futures and even those of their communities (Gillette, 2003). Volunteering provides informal learning platforms and is therefore a crucial vehicle to life-long learning where volunteers gain knowledge, exercise skills and extend their social networks leading to new or better employment opportunities, as well as personal and social development.

Although everyone agrees on the value of volunteers, humanitarian organizations must still take steps to care for them. There are not many guidelines that address caring for volunteers post-disaster. Only slightly more than a half of the 189 IFRC National Societies have a volunteer policy and fewer have a volunteer development plan, but many more have dedicated human resources to volunteer management (Taking volunteers seriously, 2007). However, none of these policies or guidelines has

made any attempts to create an operational framework or a model that can guide psychosocial support interventions directed at volunteers.

1.2.3 The IASC Guidelines

One of the largest steps recently taken to make international recommendations about mental health and psychosocial support in emergency settings is the Inter-Agency Standing Committee Guidelines (IASC) (Inter-Agency Standing Committee, 2007). When the Guidelines were issued, there was a significant gap in interagency frameworks that would enable coordination and identification of useful practices for disaster victims in general, including staff. They identified potentially harmful practices and clarified how differing approaches may complement each other. They cover a broad spectrum of needs ranging from practical sides such as co-ordination, assessment, monitoring and evaluation and human rights, as well as the personal needs of beneficiaries and humanitarian workers. Recommendations for caring for the mental health of staff are proposed on action sheet 4.4 in the guidelines (pp. 87). Although including volunteers in the definition of staff, the word 'staff' in this action sheet refers to paid and volunteer, national and international workers, including drivers and translators, affiliated with an aid organization. Thus, no clear distinction is made between the needs of volunteers and staff.

These guidelines reflect the insights of mental health experts (evidence informed) from different geographic regions, disciplines and sectors, and reflect an emerging consensus on good practice among practitioners. The core idea behind them is that, in the early phase of an emergency, social supports are essential to protect and support mental health and psychosocial well-being (Inter-Agency Standing Committee, 2007).

1.2.4 The IFRC volunteer policy

In the past decade the IFRC has put efforts into creating a good policy for volunteer management that states that volunteers should have the right to receive the necessary information, training, supervision, personal and technical support for the discharge of their duties. They should be insured against the risk of accidents and illnesses related

to the volunteer activity and have the right to work in safe, secure and healthy conditions. Moreover, they should have the right to be reimbursed for reasonable expenses related to the volunteer activity, as well as be provided with basic subsistence support for food and accommodation whenever the volunteer assignment so requires and have appropriate accreditation, describing the nature and length of time of the volunteer activity, as well as certification acknowledging the volunteer's contribution at the end of the service. Equally, the volunteers are expected to conform to the objectives and observe the regulations of the organization in which they are involved, respect the rights, beliefs and opinions of beneficiaries and to participate in any necessary training courses provided by the host organization (Volunteering policy, 2002).

When preparation of this dissertation began, the Volunteer Policy of the IFRC was lacking an element of mental health care for volunteers, but rather emphasized the material support to volunteers and the role of volunteers in improving well-being of beneficiaries. This changed with the revision of the policy in 2011, due to feedback from our study as well as from other bodies of opinion. However, a policy is only a document unless it is implemented. Based on limited resources and capacity of the Red Cross and Red Crescent National Societies, there are great variations in the extent and manner in which the policy is implemented throughout the world.

1.2.5 Volunteering post-disaster

People who volunteer post-disaster come from all walks of life. They include male, female, unemployed or professionals, young, old, students and people from every ethnic background or belief group. The majority is young, physically fit and readily available. During large-scale events and disasters every community needs to rely on their volunteer resources as professional resources may be overloaded. This is especially true for less developed nations that may not have professional resources readily available and may have to rely on external professionals should the community be struck by a disaster. One should not forget that many of these individuals are young students and unemployed people as they can be readily available. At the end of their

mission they then return to their prior work or home setting where their experiences may not be shared or understood by others.

Although the humanitarian aid community can respond quickly (within 48 hours) with Emergency Response Units (or ERU's) that, for example, set up field hospitals, water and sanitation stations as well as distributing relief, the local immediate response time can be critical in terms of lives saved or reduction in morbid injury and resources lost. Volunteers are therefore a valuable resource. Despite volunteers' key role in emergency and disaster response, their role and legal protection often lacks clarity. Even though the past decade has seen an increase in legislation relating to volunteering in general, specific issues may arise in the context of emergencies, for example exposure to contamination or exploitation are understudied, but in a study conducted by the IFRC showed that protection varies from one country to another (The Legal framework for volunteering in emergencies, 2011). This may reflect volunteers' sense of safety and this lack of safety has been shown to influence mental health and exacerbate post-traumatic stress disorder (PTSD) symptoms in people having experienced critical events (Dückers, 2013; Hobfoll et al., 2007).

1.2.6 Core versus non-core volunteers

In general, although no literature exists to confirm, volunteers fall into two main categories, core and non-core volunteers. The former have volunteered in non-disaster times and received appropriate preparation and training. The latter, are new to this type of work and have simply responded ad hoc to an urgent need within their community. Core-volunteers will be more familiar with the organization's structure, support system and internal network. It has been shown that workers and volunteers in occupations least likely to have had any prior disaster training or experience e.g. electricians or other technical people, are at the greatest risk of developing Post-Traumatic Stress Disorder symptoms or PTSD (Perrin et al., 2007).

Apart from the daily tasks assigned to them as a non-professional resource, such as assisting with administration and packing of food or non-food items, these volunteers

also carry out tasks that professionals will respond to in non-disaster times. This can include evacuation of bodies and burials; limb amputations of community members stuck under rubble; basic and advanced first aid to the severely injured; evacuation from unsafe buildings; clean up of rubble; provision and setting up of shelter as well as distribution of food and water. These tasks are often highly emotionally impactful like tracing lost family members, providing psychosocial support to the affected and distribution of relief to those unable to reach aid. Due to the nature of disaster settings - being mostly sudden, unpredictable and chaotic - the volunteers may have to work within unclear task descriptions and attend to ad hoc requests triaged by team leaders or operational managers. They may work for varying amounts of time, some for weeks or months and may at the end of mission, never return back to the organization and thus never receive any follow up or support (Inter-Agency Standing Committee, 2007). Thus, quality volunteer management is required in order to look after and follow up on their health, both physical and mental.

1.2.7 Affected versus non-affected volunteers

There is a further subcategory of volunteers that relates to their personal affectedness. The levels of affectedness can be the following:

- Directly affected: these volunteers come from the community itself, some volunteers will have lost family members or friends, considerable resources, their livelihoods and even their social networks.
- Indirectly affected: these volunteers may come from the affected community or also from outside of it. They may have indirect ties to those affected, e.g. by knowing someone close to them who was affected.
- Non-affected: these volunteers come from outside of the community and have no ties to the community at all and do not know any of the affected people.

Typically about half of the volunteers come from the affected community. This also means that they and their families are often unable to leave the affected area, even if the security situation worsens. The volunteers who are a part of the

affected community may have specific risks for developing mental health problems. However, the non-affected volunteers also are at risk, although their risk factors might be different. They may feel separated from their own support network, may even have to adjust to a different sub-culture or face harsh living conditions, e.g. sleeping on the floor at the branch facilities for weeks (Inter-Agency Standing Committee Guidelines, 2007). These differences in risks and circumstances are often forgotten in staff and volunteer support systems.

1.3 Posttraumatic Stress Disorder (PTSD)

1.3.1 Definition and history

Psychological stress can be defined as the presence of a specific situation in which individuals perceive that they are not able to adequately deal with the demands or threats to their well-being that the situation imposes (Lazarus, 1966). When an individual experiences, witnesses, or is confronted with an event that involves actual or threatened death or serious injury, or a threat to the physical integrity of self and others, the experienced stress may be traumatic. The word “Trauma” comes from Greek and means “Wound” and was first used to describe mental shock in the beginning of the twentieth century (Brewin et al., 2003).

A minority of individuals who are exposed to severe, chronic or traumatic stress subsequently develop ongoing mental or physical health problems, which can impair emotional, occupational and social functioning. Conditions that may arise in response to stress-and trauma exposure include post-traumatic stress disorder (PTSD) (Ozer, Best, Lipsey, & Weiss, 2008), major depressive disorder (MDD) (Keane, Taylor, & Penk, 1997) and prolonged severe fatigue (Spinhoven & Verschuur, 2006).

The effects of traumatic events on a person’s psyche have been increasingly recognized in recent decades (Gersons & Carlier, 1992; Santiago et al., 2013). However, in the beginning of last century it was assumed that distress related to such events was not a subject for intervention as people would recover naturally over time. However, in World War I, psychiatrists treating military personnel observed that soldiers exposed

to horrors in the battlefield were experiencing a type of mental breakdown, which they would refer to as “Shell shock” (Myers, 1940). This was the first attempt to give the condition a specific name. In 1947 Kardiner and Spiegel took the concept further and developed clinical outlines for the syndrome which he based on his experience with soldiers from World War I but the concept was not empirically investigated until in Vietnam veterans, which eventually lead to the inclusion of the disorder into the third version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III)(American Psychiatric Association, 1980) as an anxiety disorder. There it was introduced as a “monocausal” mental disorder that required a known stressor “that would evoke significant symptoms of distress in almost everyone” and was “generally outside the range of usual human experience” (American Psychiatric Association, 1980). In the revised version, DSM-III-R, the stressor (referred to as Criterion A), was defined further and required to give examples of qualifying events (e.g. serious threat to life or physical integrity). Despite a great increase in knowledge in the recent decades, the diagnosis of PTSD still attracts controversy. The justification of diagnosis was built on the previous assumption that traumatic events could only produce transitory mental disturbance, which meant there was no diagnosis available for those who developed long-lasting psychopathology in response to traumatic events. This created great controversy, as this meant introducing a disorder explained entirely by an external event, rather than the characteristics of a person, or their interactions, which was in marked contrast to other disorders in the DSM III. With increased research it soon become evident that these events were much more common than previously assumed and that only a small proportion of individuals would go on to develop the disorder, facts that challenged the conceptual basis of the disorder (Yehuda & McFarlane, 1995). Now, it is known that although the nature and the intensity of the stressor is important, PTSD has a multifactoral etiology (Brewin, Andrews, & Valentine, 2000). With the revised version of DSM IV it was clarified that a person needed to be symptomatic for at least one month for a diagnosis of PTSD to be made.

Finally, in DSM-V PTSD was moved from Anxiety disorders to a new chapter referred to

as Trauma and Stress Related Disorder. Compared to DSM-IV, the diagnostic criteria for DSM-V defines more clearly what constitutes a traumatic event (See Appendix 1). In this version, sexual assault is specifically included, as is recurring exposure that could apply to police officers, first responders and community volunteers in disaster prone areas. The person's response to an event (Criterion A2), e.g. intense fear, helplessness or horror (as previously emphasized in DSM-IV) has been deleted as research suggests that Criterion A2 did not improve diagnostic accuracy (Friedman, Resick, Bryant, & Brewin, 2011).

Furthermore the three clusters of DSM-IV symptoms have now been changed into four clusters: intrusion, avoidance, negative alterations in cognitions and mood and alterations in arousal and reactivity. For this change to be made, DSM-IV Criterion C, avoidance and numbing, was separated into two criteria: Criteria C (avoidance) and Criteria D (negative alterations in cognitions and mood). The reason for this change was based upon factor analytic studies (American Psychiatric Association, 2013).

In this dissertation I talk about PTSD symptoms as a the measurement tool used in the study, the Impact of Event Scale – Revised (Weiss & Marmar, 1997) does not allow for a clinical diagnosis of the disorder but measures levels of symptoms. However, a cut-off score corresponding to a diagnosis of PTSD (cut-off at 33) are available (Creamer, Bell, & Failla, 2003) and were used in this study.

1.3.2 PTSD prevalence

PTSD in the general population

Epidemiological studies have shown that a high percentage of individuals may experience a potentially traumatic event during their lifetime that fulfills criterion A1 in the DSM-V (Miller et al., 2013). Although this may vary between regions of the world, highly developed countries such as the Netherlands show a lifetime prevalence of potential trauma to be 80.7 percent (de Vries & Olf, 2009), which is slightly lower than 89.6 percent prevalence rates found in the United States (Breslau et al., 1998). The

prevalence of PTSD in individuals who have experienced a traumatic event has been shown to be around 9 percent in the general population although it varies between types of trauma and populations studied (Breslau et al., 1998) and traumatic events showing intention to cause harm have higher incidence rates than non-intentional events (Santiago et al., 2013).

After experiencing a traumatic event it is regarded as normal to feel wound up, irritable and even frightened of a recurring event. The event may have deleterious effects on a person's memory and the capacity to concentrate on tasks or sleep well may also be impaired. Some will even experience intrusive memories or nightmares of the event. Though most people are resilient and recover without any professional intervention, others may need professional assistance in working through their experiences as it may cause impairment in personal, social and/or occupational life.

Several meta-analyses of risk factors for PTSD in trauma exposed adults have shown that gender, age at trauma, and race predicted PTSD in some populations but not in others; factors such as education, previous trauma, and general childhood adversity predict PTSD more consistently but to a varying extent according to the populations studied and the methods used; and factors such as psychiatric history, reported childhood abuse, and family psychiatric history have more uniform predictive effects. Individually, the effects of all the risk factors is modest and varies between studies and study samples, but factors operating during or after the trauma, such as trauma severity, lack of social support, and additional life stress, have somewhat stronger effects than pre-trauma factors (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2008).

PTSD in direct survivors of disasters

When focusing solely on disasters the mental and physical health consequences of disasters on direct survivors have been heavily documented through the years (Altindag, Ozer, & Sir, 2005; Armenian, Melkonian, & Hovanesian, 1998; Arnberg, Hultman, Michel, & Lundin, 2013; Basoglu, Kihc, Salcioglu, & Livanou, 2004;

Böðvarsdóttir & Elklit, 2004; Cao, McFarlane, & Klimidis, 2003; Lai, Chang, Connor, Lee, & Davidson, 2004; McFarlane, Clayer, & Bookless, 1997; Montazeri et al., 2005; North et al., 1999; Van der Velden et al., 2006; Wahlström, Michélsen, Schulman, Backheden, & Keskinen-Rosenqvist, 2013; Wang et al., 2000; Vermetten & Olf, 2013; Zatta, Santonastaso, & Favaro, 2012). When a disaster strikes, the devastation can be extensive both in terms of lives lost, livelihood and resources and expose people to multiple stress factors. It has been shown that traumatic events that affect various domains e.g. loss of a loved one, livelihood and social network, are more likely to generate a negative adaptive spiral than events with more limited effects (Schnurr, Spiro, Aldwin, & Stukel, 1998).

PTSD is the most frequently reported mental health disorder that develops from disaster exposure with levels ranging from 10.3% (Lai et al., 2004) to 34.3% (North et al., 1999) between 6-18 months post disaster. Focusing on earthquakes specifically, as I do in this dissertation, similarities in PTSD prevalence across various cultures are striking with China reporting 23% (Cao et al., 2003), Turkey 23% (Altindag et al., 2005) and Iceland reporting 24% of the affected community suffering from PTSD 18 months post-disaster (Böðvarsdóttir & Elklit, 2004). However, much of the knowledge about mental health problems after traumatic events comes from treatment seeking populations (Bonanno & Mancini, 2008). Many will show only minor and transient disruptions in their ability to function.

The main predictors for civilian complaints after a disaster have been shown to be, loss of a loved one (Basoglu et al., 2004; Carlier & Gersons, 1997; DeSalvo et al., 2007; Favaro et al., 2004; Montazeri et al., 2005; Tural et al., 2004), damage to property (Armenian et al., 1998; Basoglu et al., 2004; Carlier et al., 1997; De Salvo et al., 2007; Tural et al., 2004), pre-disaster mental health problems (Basoglu et al., 2004; Kohn, Levav, Garcia, Machuca, & Tamashiro, 2005; Lewin, Carr, & Webster, 1998; North et al., 1999; North et al., 2005; Tural et al., 2004), feelings of guilt (Alexander & Wells, 1991; Kuo et al., 2007), life events post-disaster (Carr et al., 1997; Hull, Alexander, & Klein, 2002; Lewin et al., 1998), female gender (DeSalvo et al., 2007; Favaro, Zatta,

Colombo, & Santonastaso, 2004; Kohn et al., 2005; Kuo et al., 2003; Kuo et al., 2007; Lai et al., 2004; Maes, Mylle, Delmeire, & Janca, 2001; McFarlane et al., 1997; Montazeri et al., 2005; North et al., 1999; North et al., 2005; Tural et al., 2004), old age (Favaro et al., 2004; Toyabe et al., 2006; Varela, Koustouki, Davos, & Eleni, 2008; Yang et al., 2003), physical injury (Altindag et al., 2005; Hull et al., 2002; Kuo et al., 2007), lack of social support (Altindag et al., 2005; Armenian et al., 2002; Carr et al., 1997; Favaro et al., 2004; Feng et al., 2007; Wang et al., 2000), exposure to gruesome things (Armenian et al., 1998; Basoglu et al., 2004; Carlier et al., 1997; Carr et al., 1997; Dirkzwager, Grievink, Van der Velden, & Yzermans, 2006; Escobar, Canino, Rubio-Stipec, & Bravo, 1992; Hull et al., 2002; Kohn et al., 2005; Lai et al., 2004; Lazaratou et al., 2008; Lewin et al., 1998; Polusny et al., 2008), and low level of government support or dissatisfaction with post-disaster aid and/or insurance (Dirkzwager et al., 2006; Wang et al., 2000).

PTSD in emergency professionals

The mental and physical strain emergency professionals take on during disaster operations is high. Due to the nature of their tasks they often work in a highly strenuous and physically demanding situation that may be unsafe and unpredictable. PTSD in emergency professionals has been shown to vary from 5-40 percent (Chang et al., 2003; Fullerton, Ursano, & Wang, 2004; Galea, Nandi, & Vlahov, 2005; North et al., 2002; Tak, Driscoll, Bernard, & West, 2007).

Interestingly, the literature shows a difference in PTSD complaints between professions, where police officers seem to show lower levels of complaints (Carlier, Lamberts, Van Uchelen, & Gersons, 1998; Marmar, Weiss, Metzler, & Delucchi, 1996; Renck, Weisæth, & Skarbö, 2002) than fire-fighters (Chang et al., 2003; North et al., 2002; Tak et al., 2007) when compared to civilians and the lowest levels when compared to other professionals (Perrin et al., 2007). The main predictors for the complaints in police officers are post-disaster life events (Epstein, Fullerton, & Ursano, 1998; Witteveen et al., 2007), level of preparation and/or training (Marmar et al., 1996; Perrin et al., 2007) and level of exposure to gruesome things (Epstein et al.,

1998; Marmar et al., 1996). Main predictors for complaints in fire-fighters are job experience (Chang et al., 2003), low supervisor support (Tak et al., 2007), low job satisfaction (North et al., 2002), younger age and single status (Witteveen et al., 2007). Note however, that the effect of all of these predictors is modest and the effects of the predictors vary greatly between studies and study samples (Brewin et al., 2000).

Although symptoms comprising the PTSD diagnosis are the most prevalent complaints, other outcomes have also been studied such as depression (Cardozo et al., 2005; Fullerton, Ursano, & Wang, 2004; Tak et al., 2007), somatic complaints (Escobar et al., 1992; Morren, Yzermans, Van Nispen, & Wevers, 2005; Witteveen et al., 2007) and chronic fatigue (Morren et al., 2005; Spinhoven et al., 2006; Witteveen et al., 2007). PTSD and major depression often occur as separate disorders or concurrently after traumatic exposure, but in those who develop chronic PTSD, comorbid depression may occur in over 40 percent of the individuals (Orsillo et al., 1996).

On the other hand, these prevalence rates, although high, remind us that many people are resilient. An interdisciplinary group of experts tackled the questions on how to define resilience, coming to the conclusion that resilience is a complex construct and it may be defined differently in the context of individuals, families, organizations, societies, and cultures. Nevertheless, proposed definitions included a stable trajectory of “healthy functioning after a highly adverse event; a conscious effort to move forward in an insightful and integrated positive manner as a result of lessons learned from an adverse experience; the capacity of a dynamic system to adapt successfully to disturbances that threaten the viability, function, and development of that system; and a process to harness resources in order to sustain well-being.” (Southwick, Bonanno, Masten, Panter-Brick & Yehuda, 2014).

Identifying risk or resilience factors for physical and mental morbidity assists organizations in identifying volunteers who might require being assigned to less demanding tasks, rotate between tasks or followed up in a specific way post-disaster. Moreover, these factors might be influenced, changed or even removed in certain

disaster settings. Scientifically gathered information about them can be used to design appropriate guidelines, interventions, programmatic approaches and training.

PTSD in volunteers

In various types of crises, PTSD has been shown to range from 24.2% (Armagan, Engindeniz, Devay, Erdur, & Ozcakil, 2006) to 46% (Mitchell et al., 2004) in volunteers. In spite of this, there is dearth of knowledge on the mental health of disaster volunteers and only one longitudinal study had been carried out with disaster volunteers at the start of this dissertation (Thormar, Gersons, Juen, Marchang, Djakababa, Olf, 2010; Ursano et al., 1999).

When reviewing the literature in 2006 there was very little material. A handful of studies included in Chapter 2 of this dissertation showed high levels of PTSD symptoms, but there was a lack of longitudinal studies. Furthermore, there were no studies to be found that addressed the topic of volunteer management in relation to mental health during and after disaster work. Recently more studies have started to appear on mental health effects of volunteering post-disaster where the findings show higher complaints in volunteers than in professional workers (Perrin et al., 2007).

1.4 Disaster Management

The operational framework of humanitarian response is often referred to as disaster management. Disaster Management has been defined by the IFRC as “the organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response and recovery in order to lessen the impact of disasters.” (www.ifrc.org – About disaster management).

Due to the sharp increase in the number of natural disasters worldwide in recent years, the IFRC has paid increasing attention to disaster management activities. These activities have the goal of making National societies and their communities more aware of and prepared for the hazards they face in case of a disaster.

Prevention of and preparation for disasters, assistance to victims and reconstruction are first and foremost the responsibility of the public authorities, but the IFRC will actively offer assistance to communities through the local Red Cross and Red Crescent National Society. In principle, Red Cross and Red Crescent help is of a complementary and auxiliary nature, in a spirit of co-operation with the public authorities, and is mainly given in the emergency and reconstruction phase, where volunteers mostly carry it out.

The IFRC is committed to its Global Agenda Goal 1: “to reduce the numbers of deaths, injuries and impact from disasters” and the three strategic aims of Strategy 2020 are: (1) to save lives, protect livelihoods, and prepare for and recover from disasters and crises; (2) to enable healthy and safer living; and (3) to promote social inclusion and a culture of non-violence. This is all informed by a cross-sector approach, which prioritize interventions and expected outcomes in the following sectors:

- Community preparedness and risk reduction – aimed at increasing community awareness and understanding of local disaster risk and creating better community preparedness to respond and protect lives and livelihoods.
- Disaster services – focusing on disaster management services prioritized by National Societies, including co-ordination, information management and trend analysis aimed at providing more services to more vulnerable people and increasing the effectiveness of their preparedness, relief and recovery programs.
- Shelter and settlement – reducing shelter related risks and vulnerabilities and strengthening response and recovery for sheltering in affected communities.
- Logistics – realigning of the logistics structure and resources to deliver mandatory services to beneficiaries through identified structures.
- Health – Good health – the state of physical, mental and social well-being. The health activities are intended to reduce individual and community vulnerability, e.g. by improved access, increase life expectancy, change birth rate patterns, persistent gender inequalities, together with social, economic

and personal behavioral trends, that all contribute to a significant change in disease patterns. (International Federation of Red Cross – Strategy 2020)

For all of these activities volunteers play an essential role. Training and management of volunteers is therefore directed towards these sectors.

1.4.1 Volunteer management

Volunteer management is often discussed from the beneficiary point of view where the emphasis is on volunteer capacity and skill building that aims to benefit the affected community. The other side to volunteer management involves the need for team leader and/or management training and skill building to support this valuable community resource – the volunteers. Furthermore, it involves the training of the volunteers themselves in self-care and support techniques so they can support each other. Volunteer development touches different elements within the organization, e.g. funding, training, equipment available, safety etc. and thus may reveal wider organizational development issues that need to be addressed (Taking volunteers seriously, 2007).

Indonesia is a good venue to study community volunteers. First, the country is considered one of the most disaster prone countries in the world (United Nations, Development Program Indonesia, 2014) and second, it has a highly valued volunteer management program. The Indonesian Red Cross operates under a management framework, which they refer to as “PMI Volunteer Management Cycle”: Recruitment – Orientation & Training – Mobilization – Capacity Improvement – Monitoring & Evaluation. Mainly, volunteers of the PMI are divided into two main groups; the Volunteer Corps (KSR) and the individual volunteer (TSR). In my study I refer to them as “core and non-core volunteers” respectively.

The core volunteers are one of PMI's most essential human resources which they recruit on a regular basis and train according to three main training agendas:

- Basic training (120 hours);
- Specialization training, e.g. first aid, psychosocial support, water and sanitation, field kitchen, logistics and distribution etc. (most subjects are 50 hours);
- Support training (which varies in hours and refers to a gap in services where a volunteer gets specifically trained for a certain task to provide support to the operation, e.g. satellite phone training).

The non-core volunteers are trained for 4 hours which is considered orientation training only covering the following topics:

- Introduction to the function and goals of the Indonesian Red Cross;
- The 7 principles of the Movement;
- Code of Conduct.

Some of the non-core volunteers however, do not even receive this part of the training if the disaster emergency is sudden, large and acute. Many of the non-core volunteers are selected due to a certain skill base, e.g. photographers, carpenters, doctors, nurses, etc. and are assigned a specific task fitting with their training. However, a photographer can quickly become a logistic person, nurse or computer technician if the need is overwhelming.

1.5 Gaps in the current knowledge

When studying the literature on volunteers mental health six major limitations can be observed:

First, despite of millions of volunteers offering themselves to disaster work annually there is a dearth of publications on the mental health effects of humanitarian volunteers. The few studies that have studied this population assume its homogeneity.

Second, despite damage to property being a known predictor for PTSD symptoms in community survivors and although many of the studies recognize that volunteers are often coming from the affected community, none of the prior studies has looked at the importance of resource loss in relation to mental health complaints of volunteers. Based on field insight, volunteers are often the least managed group in terms of resources, e.g. sleeping facilities or logistic support.

Third, the large volunteer groups in major disasters will often consist of volunteers coming both from the affected community as well from neighboring towns or cities. It seems fair to assume that those who may be highly personally affected themselves (for example by having lost family members, house and/or livelihood) would be already vulnerable at the beginning of the work and thus at a higher risk of developing psychopathology. In spite of this, none of the prior studies has looked at levels of personal affectedness in relation to mental health complaints in volunteers post-disaster.

Fourth, due to the chaotic and stressful environment post-disaster there may be difficulties in achieving good rest. This is because the volunteers feel pressured to stand long shifts and also due to resting facilities being few and/or non-existent. Quality of sleep has been shown to predict PTSD symptoms in police officers (Neylan et al., 2002) and it seems logical that this variable would be of importance in this group of volunteers but no prior studies have looked at the effects of rest or sleep quality on the volunteer.

Fifth, by classifying volunteers as one homogenous group responding to a certain disaster, the important effects of experience, training and preparation is ignored. Only one study has looked at differences in disaster experience within the group and found no differences (Armagan et al., 2006) and no study has looked at elements of preparation or training. Only Paton (1994) has attempted to look at effectiveness of training by assessing which event characteristics are perceived as stressors and found that training is not likely to prepare volunteers well for major disaster work.

Sixth, no prior studies have separated volunteers into core and non-core groups. This seems an essential part of studying volunteers as half of the group is likely to have responded ad hoc to a major disaster with no prior training or experience to fall back on and little insight, if any, into either the organization or its support network.

2 The Study

2.1 Overview of the study design

We tried to fill the gaps identified above. In co-operation with the board of the Indonesian Red Cross (PMI) and its branches in the Yogyakarta area we studied the volunteers that responded to the earthquake. A longitudinal cohort study was carried out, starting out with 516 volunteers (of the 877 who responded), on three measurement points: 6-, 12- and 18-months post disaster (Figure 1). All data were coded to allow for individual as well as group follow up. The main outcome measurement tools used were the Indonesian versions of the Impact of Event Scale-Revised (Weiss & Marmar, 1997) and Subjective Health Complaints Inventory (Eriksen, Ihlebaek, & Ursin, 1999) both of these tools have been used extensively in different cultures and sufficient reference data are available (Weiss, 2007). Although tempting to explore most of the predictors for complaints in professionals, a selection had to be made, based on field insight, regarding what might be most relevant in terms of volunteer management.

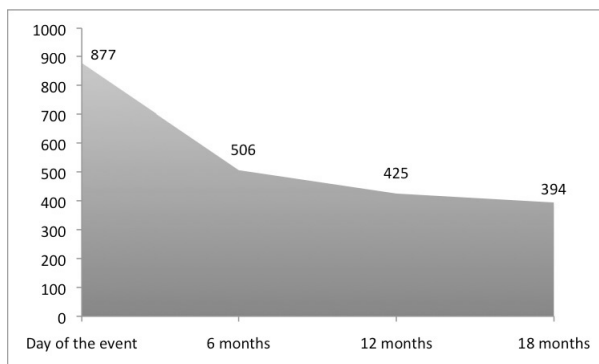


Figure 1. Overview of the study design and number of volunteer respondents at all time points

2.2 Aim of this dissertation

The primary aim of this dissertation is to:

1. Longitudinally describe the incidence of PTSD symptoms, anxiety, depression and subjective health complaints in a cohort of volunteers working in the aftermath of an earthquake.
2. Identify predictors of psychopathology, in particular PTSD symptoms in volunteers post-earthquake.

A secondary aim is to suggest an operational framework based on the outcomes, e.g. by creating recommendations for the revision of IASC guidelines, which may serve to shape a deliberate planning and evaluation approach for the support of volunteers in a future disaster context.

2.3 Research questions and hypotheses

In sum, specific research questions are:

- 1. What is the incidence of PTSD symptoms and other mental health complaints in volunteers post-disaster? (Chapter 2)**

In chapter 2 we answered *research question 1* by exploring in a review of the literature what the current knowledge on prevalence of PTSD symptoms and other mental health complaints in volunteers post-disaster was.

- 2. Are there particular organizational risk factors for mental health complaints and in particular PTSD symptoms in volunteers? (Chapter 3, 4)**

By testing the following hypotheses this question was assessed in several chapters. In chapter 3 we hypothesized that; i) good preparation and training would serve to buffer against psychopathology, ii) certain tasks, in particular body recovery, psychosocial support and lack of support from the organization would result in higher psychopathology.

In chapter 4 we hypothesized that low sleep quality would be related to higher psychopathology.

3. Do directly affected volunteers differ from indirectly or not personally affected volunteers in terms of PTSD symptoms? (Chapter 4)

This we looked at specifically in chapter 4 where we divided the volunteer group up in three layers. Whether they considered themselves to be an: External helper coming from outside the area with no ties to the area, external helper but also personally affected due to family or close friends being affected, and lastly whether they considered themselves to be directly personally affected by the earthquake. We hypothesized that those who considered themselves to be an external helper coming from outside the area with no ties to the area would have the lowest levels of PTSD symptoms.

4. Do core and non-core volunteers follow the same PTSD symptoms trajectories? (Chapter 5)

In chapter 5 we made a latent growth analysis of the data and identified trajectories both in the whole sample and in core and non-core volunteers separately. We hypothesized that there would be a chronic trajectory (high PTSD symptom levels that will not quickly recover) and a resilient trajectory (moderate levels of PTSD symptoms with slow decrease over time) where the non-core volunteers would have higher levels of PTSD symptoms in both trajectories.

5. Are there different risk factors for the PTSD symptom trajectories in core versus non-core volunteers? (Chapter 5)

After identifying the different trajectories through latent growth analysis we used ANOVA analysis to identify different predictors for different trajectories and presented this in chapter 5. We were particularly interested in social acknowledgement as it has been previously shown to influence symptoms in returning soldiers (Solomon, Mikulincer, & Flum, 1989) and hypothesized that lack of social acknowledgement, low levels of personal self-efficacy a known PTSD predictor (Hirschel & Schulenberg, 2009) would be related to higher levels of PTSD symptoms. A closer look was also taken at

tasks assigned to see whether certain tasks may be more suitable for core than non-core volunteers due to their differences in training and level of preparation.

6. Can we derive an operational framework out of results and literature that enables us to further shape a deliberate planning and evaluation approach for the support of volunteers in a disaster context? (Chapter 6 and 7)

In chapter 6 we attempted to design a framework for an operational model and we explored theoretically the literature on psychosocial interventions post-disasters and ways to think about future programming and interventions for beneficiaries and volunteers included. The reason why we decided to take the broader context (those affected by disasters) was to be able to expand the literature on the topic so the article could be useful in a broader context post-disaster, not solely limited to volunteers but easily translated to interventions with volunteers.

Based on a combination of renowned quality models, a framework and model was sketched that offers chances to better understand and optimize the quality of post-disaster psychosocial support post-disaster.

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Chapter 2. The mental health impact of volunteering in a disaster setting: A review

2

Sigrídur Björk Thormar¹

Berthold Paul Rudolf Gersons²

Barbara Juen³

Adelheid Marschang⁴

Maria Nelden Djakababa¹

Miranda Olf¹

- 1 Center for psychological Trauma, Department of Psychiatry, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands
- 2 Centrum'45, Diemen, The Netherlands
- 3 University of Innsbruck, Innsbruck, Austria
- 4 International Federation of Red Cross and Red Crescent Societies, Geneva, Switzerland

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Abstract

This article reviews the literature on mental health of volunteers after working in disasters. When mobilized they often are a communities major source for rescue and recovery. PsychINFO, PubMed and Web of Science were searched for relevant articles published till October 2009. Of 448 articles screened, only 9 articles fulfilled our inclusion criteria. They examined the aftermath of earthquakes (4), terrorist bombings (1), explosions (1), aviation disasters (1), tsunami (1) and a bus accident (1).

Findings showed that volunteers have considerable to high levels of complaints. When compared to professional workers, volunteers tend to have higher complaint levels. The following factors were found to contribute to mental health complaints of volunteers: Identification with victims as a friend, severity of exposure to gruesome events during disaster work, anxiety sensitivity and lack of post-disaster social support. The review reveals the need for more research regarding predictors of stress in volunteers.

Keywords: disaster, volunteer, mental health, psychological, emergency

Introduction

In the last 40 years the number of disasters has increased more than fourfold (International Federation Red Cross and Red Crescent societies. World Disaster Report,2002). A disaster has been defined as a situation or event which overwhelms local capacity, necessitating a request to a national or international level for external assistance (www.em-dat.net). In 2006, there were 426 reported natural disasters worldwide with 23.000 people killed and 143 million affected (www.cred.be). One of the main resources for external assistance are community volunteers, which are often the main source for rescue and recovery. They can be everything from walk in volunteers that respond to the declared need and/or volunteers from humanitarian organisation like the Red Cross/Red Crescent, UNICEF, Médecins Sans Frontières (MSF) or others.

Using volunteers in disasters cannot be avoided due to the large-scale impact of such events. With increasing numbers of disasters the number of volunteers is decreasing. From 1988 to 1998 in the Red Cross and Red Crescent Movement alone the numbers declined from approximately 250 million to 105 million. Some of the decrease may be explained with the fall of the Soviet Union where members may have been registered as volunteers. Worldwide volunteers respond to the needs of about 200 million people yearly (www.ifrc.org/voluntee/role.asp). The UK organization Volunteer Services Overseas (VSO) has also announced that their volunteers have decreased by 31% in the last 6 years (www.worldvolunteerweb.org/mdgs/mdg-stories/doc/vso-concerned-by-sharp.html).

Disaster settings are full of potentially traumatic stressors. Traumatic stressors are defined as extreme or severe events that are so powerful, harmful and threatening that they may demand extraordinary coping efforts (Michenbaum,1997). Many individuals who have been exposed to traumatic stressors suffer negative psychological consequences ranging from mild anxiety to clinical disorders such as panic disorder, major depression and substance addiction (Duncan et al.,1996; Green et al., 2000; Polusny and Follette, 1995). Some develop Post Traumatic Stress Disorder

(PTSD) which is characterised by symptoms of re-experiencing, avoidance and hyper arousal. Lifetime prevalence's of PTSD in the general population is around 6 to 8% (Frans, 2003; Kessler et al., 1995; Olff and De Vries, 2005; www.who.int/healthinfo/statistics/bod_posttraumaticstressdisorder.pdf) with women twice as likely as men to have PTSD at some point in their lives (Olff et al., 2007).

Although the aim of this review is to look at community volunteers, looking at them in isolation will give limited information. Therefore, we include a summary of the main findings for direct victims of disaster as well as the main findings for professional workers.

Effects of a disaster on direct victims

When experiencing a disaster, a person is often filled with a feeling of helplessness, horror, unsafety and exposed to multiple stress factors. Including loss of relatives and friends, exposure to dead bodies even of children, properties in ruins, release of hazardous chemicals, physical injuries and deformations of people. People can be separated from their loved ones, even their children, sometimes for weeks. Relocation to a mass care center or camps for internally displaced people can be necessary where sharing of facilities with multiple strangers results in ultimate lack of privacy. Collapse of infrastructure such as health care, schools, supermarkets or government agencies can also become a reality where lutors may violate a persons safety even further. Traumatic events that affect various domains are more likely to generate a negative adaptive spiral than events with more limited effects (Schnurr et al.,1998).

The mental and physical health consequences of disasters on direct survivors of the event have been documented through the years (Armenian et al., 1998; Basoglu et al., 2004; Böðvarsdóttir and Elklit, 2004; Lai et al., 2004; McFarlane et al., 1997; Montazeri et al., 2005; North et al., 1999; Van der Velden et al., 2006; Wang et al., 2000). PTSD is the most frequently reported mental health disorder with levels ranging from 10,3% (Lai et al., 2004) to 34,3% (North et al., 1999) between 6-18 months post disaster. Focusing on earthquakes specifically, similiarities in PTSD outcomes across various

cultures are striking with China reporting 23% (Cao et al., 2003), Turkey 23% (Altindag et al., 2005). and Iceland reporting 24% of the affected community suffering from PTSD 18 months post-disaster (Böðvarsdóttir et al., 2004). The main predictors for civilian complaints after a disaster have been shown to be: loss of a loved one (Basoglu et al., 2004; Carlier & Gersons, 1997; DeSalvo et al., 2007; Favaro et al., 2004; Montazeri et al., 2005; Tural et al., 2004;), damage to property (Armenian et al., 1998; Basoglu et al., 2004; Carlier et al., 1997; De Salvo et al., 2007; Tural et al., 2004), pre-disaster mental health problems (Basoglu et al., 2004; Kohn et al., 2005; Lewin et al., 1998; North et al., 1999; North et al., 2005; Tural et al., 2004), feelings of guilt (Alexander and Wells, 1991; Kuo et al., 2007), life events post-disaster (Carr et al., 1997; Hull et al., 2002; Lewin et al., 1998), female gender (DeSalvo et al., 2007; Favaro et al., 2004; Kohn et al., 2005; Kuo et al., 2003; Kuo et al., 2007; Lai et al., 2004; Maes et al., 2001; McFarlane et al., 1997; Montazeri et al., 2005; North et al., 1999; North et al., 2005; Tural et al., 2004), old age (Favaro et al., 2004; Toyabe et al., 2006; Varela et al., 2008; Yang et al., 2003), physical injury (Altindag et al., 2005 ; Hull et al., 2002; Kuo et al., 2007), lack of social support (Altindag et al., 2005; Armenian et al., 2002; Carr et al., 1997; Favaro et al., 2004; Feng et al., 2007; Wang et al., 2000), exposure to gruesome things (Armenian et al., 1998; Basoglu et al., 2004; Carlier et al., 1997; Carr et al., 1997; Dirkzwager et al., 2006; Escobar et al., 1992; Hull et al., 2002; Kohn et al., 2005; Lai et al., 2004; Lazaratou et al., 2008; Lewin et al., 1998; Polusny et al., 2008), low level of government support or dissatisfaction with post-disaster aid and/or insurance (Dirkzwager et al., 2006; Wang et al., 2000).

Effects of a disaster on professional rescue personnel

Recently the interest in the well-being of professional rescuers has increased. They undertake stressful tasks during recovery operations, including evacuation of bodies and body parts that may have been decomposing for days, rescuing persons from rubble where amputation can be the only possibility for rescue. Body recovery has been shown to increase somatic complaints threefold (Labbate et al., 1998) and levels of PTSD (Ursano and McCarroll, 1990). The rescuers come across displaced children

and people crying out for food, shelter and/or medical assistance. Although it has been shown that professionals may experience low levels of complaints (Alexander et al., 1991; Carlier et al., 1998; Marmar et al., 1996; Shih et al., 2002), exposure to a disaster setting can also have both short and long-term mental and physical consequences on a portion of the professionals (Chang et al., 2003; Fullerton et al., 2004; Morren et al., 2005; Tak et al., 2007; Witteveen et al., 2007). Most commonly reported complaints are: PTSD (Chang et al., 2003; Fullerton et al., 2004; North et al., 2002; Tak et al., 2007), depression (Cardozo et al., 2005; Fullerton et al., 2004; Tak et al., 2007), somatic complaints (Morren et al., 2005; Witteveen et al., 2007) and chronic fatigue (Morren et al., 2005; Spinhoven & Verschuur, 2006; Witteveen et al., 2007).

From the literature there seems to be a difference in PTSD complaints between professions. Police officers seem to show considerably lower levels of complaints compared to civilians (Carlier et al., 1998; Marmar et al., 1996; Renck et al., 2002) but in fire-fighters the PTSD is often similar to those in civilians (Chang et al., 2003; North et al., 2002; Tak et al., 2007). The main predictors for the complaints in police officers are: post-disaster life events (Epstein et al., 1998; Witteveen et al., 2007), level of preparation and/or training (Marmar et al., 1996; Perrin et al., 2007), level of exposure to gruesome things (Epstein et al., 1998; Marmar et al., 1996).

Main predictors for complaints in fire-fighters are: Job experience (Chang et al., 2003), low supervisor support (Tak et al., 2007), low job satisfaction (North et al., 2002), younger age and single status (Witteveen et al., 2007).

The psychological symptoms that survivors and rescuers report are often accompanied by physical symptoms (Dorn et al., 2006; Dyregrov et al., 1996; Escobar et al., 1992; Näätänen et al., 2002; Wang et al., 2000), such as fatigue (Morren et al., 2005; Spinhoven et al., 2006; Witteveen et al., 2007), musculoskeletal complaints (Bland et al., 1997; Morren et al., 2005), neurological complaints (Escobar et al., 1992; Morren et al., 2005), and gastric troubles (Escobar et al., 1992; Shalev et al., 1990) that are often stress related, so called medically unexplained symptoms. Due to effects on various

domains it has been shown that combined psychological trauma can escalate the rate of physical symptoms (Schnurr et al., 1998).

PTSD is associated with increased smoking, alcohol and drug abuse as well as increased physical morbidity and mortality (e.g. ischemic heart disease (Boscarino and Chang, 1999; Boscarino, 2006; Kubzansky and Thurston, 2007; Kubzansky et al., 2007), chronic obstructive pulmonary disease, obesity, diabetes mellitus, hypertension, fractures, and sexually transmitted disease (Anda et al., 2007; Felitti et al., 1998) this anxiety disorder belongs to one with the highest disease burden. Studies show that civilians and professionals who have been exposed to a disaster setting not only report medically unexplained symptoms but are more likely to be diagnosed with organic diseases (Armenian et al., 1998; Morren et al., 2005; Trichopoulos et al., 1983) and to utilize health care significantly more than the general population (Den Ouden et al., 2007; Dorn et al., 2006; Dorn et al., 2008; Morren et al., 2007; Polusny et al., 2008; Slottje et al., 2008).

Effects of a disaster on community volunteers

There is a knowledge breach in the literature on the mental and/or physical health impact on volunteers. Volunteers often are survivors of the disaster and can be seen as a group of active survivors. They vary in demographic characteristics, in duration and intensity of their exposure, previous training and experience and even in volunteer status. They are usually young, between 18-30 years old. Their immediate availability is largely dependable on the fact that many of them are students and/or unemployed. Some have become unemployed due to the disaster.

Different from professional workers, volunteers are often quickly selected based on an urgent need caused by a disaster. This may result in volunteers lacking experience, appropriate preparedness and training. Yet volunteers take on demanding tasks, especially when the disaster has exhausted the professional resources. Their role exposes them to the same difficult tasks professionals take on, like evacuation of bodies. They can be forced to triage as well as distribute food and water to populations

under conditions where aid is limited and the amount of goods each family gets, is sometimes unsatisfactory to them.

Volunteers come from different professions and do not belong to a work place with a structured support network like those that may exist within e.g. police and fire service organisations. This implies that weeks can go by after a mission before they come into contact with each other again, if ever they do. After the disaster work they return to their families, prior workplaces (if they still exist) or their schools where people may not understand their disaster experience. Social support has been shown to be a strong predictor for recovery from traumatic experiences (Brewin et al., 2000; Flannery, 1990; Ozer et al., 2003) as well as after experiencing a disaster (Cook and Bickman, 1990).

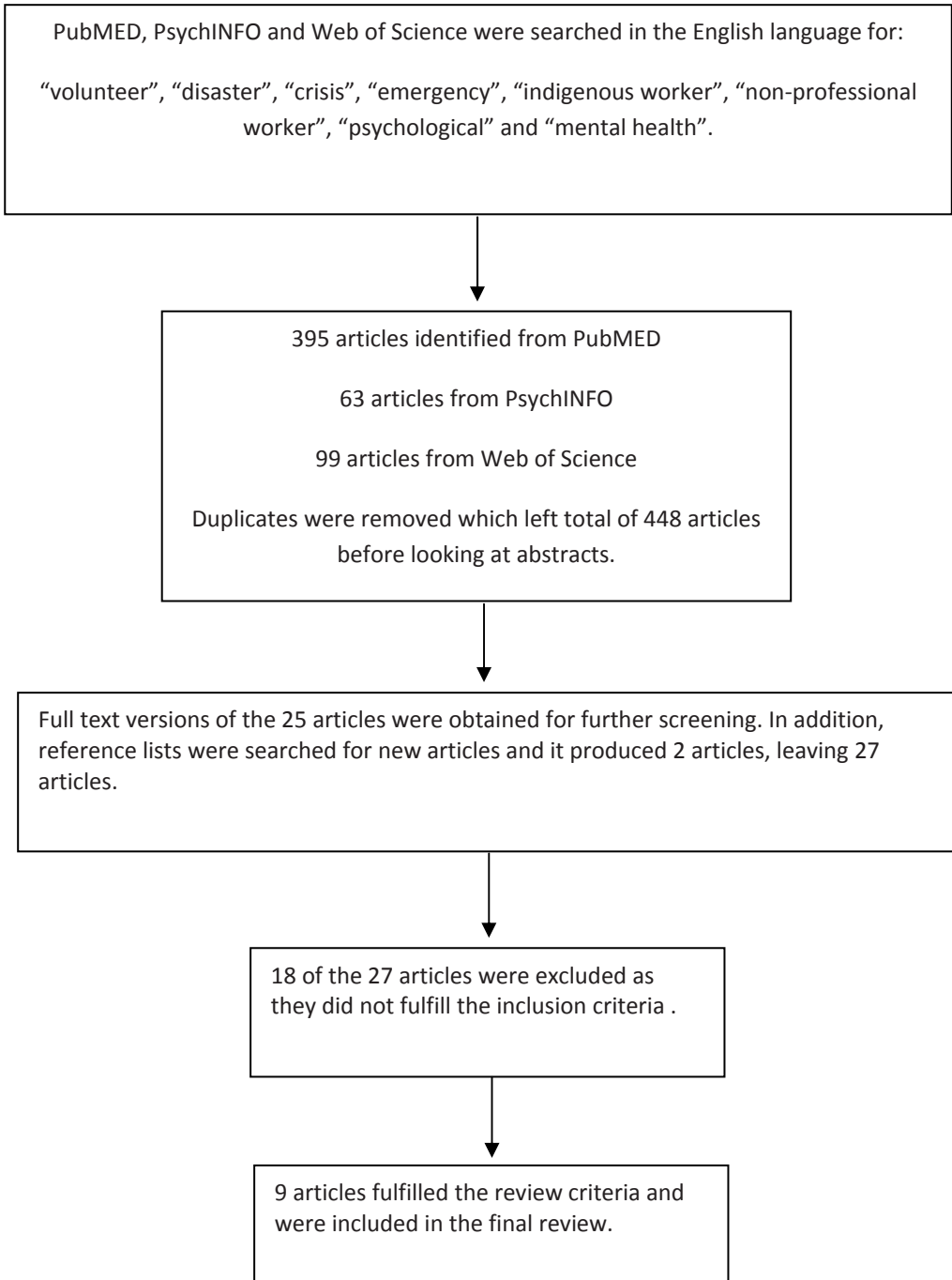
In this paper we review the literature on mental health morbidity amongst disaster volunteers and whether there are differences in reactions and predictors for volunteers vs. professionals. We expect that volunteers will have comparative or higher levels of post-disaster psychopathology since as a group they fulfil most of the main predictors for PTSD in professionals by being mainly young, inexperienced, often with limited training, limited preparedness and sometimes due to their diversity with low social and/or organisational support.

Method

Literature search was conducted using PsychINFO, PubMed and Web of Science. Search words included; “volunteer”, “disaster”, “emergency”, “crisis”, “indigenous worker” and “non-professional worker”. Those reporting mental and physical variables were included.

Selected and included studies met the following criteria: (a) work setting had been defined as a disaster, (b) volunteers were unpaid (c) had received no reported intervention (d) they were either trained volunteer groups of humanitarian aid organisations or untrained volunteer groups recruited at the scene or in the area of the disaster. The focus is kept on regular community volunteers excluding volunteer

firefighters. This is done due to the various differences in experience, training and preparation of volunteer firefighters across the world. In cases of ambiguity regarding volunteer status the paper was excluded from the review.



The included studies are described in Table 1.

Results

Nine articles met the inclusion criteria (see Table 1) and most focused on PTSD prevalence post-disaster. PTSD ranged from 24,2% (Armagan et al., 2006) to 46% (Mitchell et al., 2004) in volunteers. All of the studies that explored PTSD reported findings well above the lifetime prevalence (Armagan et al., 2006; Hagh-Shenas et al., 2005; Mitchell et al., 2004;). Some studies did not use a cut-off score for their measurements on PTSD and therefore did not report the incidence of PTSD (Cetin et al., 2005; Long et al., 2007; Paton, 1994).

Sample size varied from N=24 (Dyregrov et al., 1996) to 3055 (Paton, 1994). Four studies used a control group (Cetin et al., 2005; Hagh-Shenas et al., 2005; Karanci and Acarturk, 2005; Paton, 1994). Seven studies were cross-sectional (Armagan et al., 2006; Cetin et al., 2005; Hagh-Shenas et al., 2005; Karanci et al., 2005; Long et al., 2007; Mitchell et al., 2004; Paton, 1994) and two were longitudinal (Dyregrov et al., 1996; Ursano et al., 1999). Types of disasters varied; earthquake (Cetin et al., 2005; Hagh-Shenas et al., 2005; Long et al., 2007; Paton, 1994), tsunami (Armagan et al., 2006), bus accident (Dyregrov et al., 1996), the 9/11 attack (Long et al., 2007), aviation disaster (Mitchell et al., 2004), explosions (Ursano et al., 1999). Time from exposure to follow-up varied from one month (Armagan et al., 2006) to 4.5 years (Karanci et al., 2005) (Table 1).

Main findings and conclusions of each study are described below:

Armagan et al. 2006 looked at the prevalence of PTSD in Turkish Red Crescent volunteers after working in Banda Aceh, Indonesia in the aftermath of the Tsunami in 2004. PTSD was diagnosed in 24.2% of the participants. No differences were found on PTSD prevalence according to gender, age, profession, professional experience, previous disaster experience, and/or previous experience of traumatic events. The severity of PTSD symptoms was significantly higher in nurses (who all were women), and participants with less than 3 previous disaster duty experiences.

Cetin et al. 2005 looked at PTSD and its relationship to identification with victims in volunteers working on a post-earthquake setting of the Marmara Turkey earthquake. They found that identification with the deceased as oneself, as a friend and/or as a family member was significantly higher in the rescuer group than in the controls who were all soldiers, as were the Impact of Event Scale-Revised (IES-R) total intrusion, avoidance and hyperarousal sub-scales scores. All aspects of identification correlated with all subscales and total scores of the IES-R.

Dyregrov et al.1996 studied similarities and differences in reactions between professional and non-professional workers that attended to a bus accident involving children in a small community in Norway. Using the IES (Horowitz et al., 1979) to measure PTSD symptoms the scores for all helpers taken together were high at 1 month but showed a significant decline in IES-intrusion and total scores from 1-13 months.

TABLE 1. Overview of Methodology and Outcomes of the Studies Included in this Review

Author/year	Country	Sample (N) volunteers	Control group used	Study design	Type of disaster	Time from disaster work	Method	Outcomes measured and reported	Findings
1 Armagan et al. (2006)	Turkey	N = 33 Red Crescent Gender not reported	No	Cross-sectional	Tsunami	1 month	Interview, CAPS-1*	PTSD	24.2% with PTSD. Severity of symptoms higher in nurses (who all were women) and volunteers with less experience
2 Cetin et al. (2005)	Turkey	N = 434 100% Male *not reported	Yes, N = 54 Soldiers	Cross-sectional	Earthquake	3 months	Questionnaire, IES-R and Identification with victims with victims scale	PTSD Identification with victims	No cut off reported for PTSD. Findings suggest that identification with deceased victims is a risk factor for PTSD. Identification was higher in volunteers.
3 Dyregrov et al.,1996.	Norway	N = 24 Red Cross 87% male Volunteer fire fighters 77% male *67%	No	Longitudinal	Bus accident with children	T1 = 1 month T2 = 13 months	Questionnaire, PTSD and GHQ	PTSD General health	The magnitude of reactions is somewhat higher in volunteers. Relation between disaster experience and avoidance was stronger for volunteers.
4 Hagh-Shenas et al. 2005	Iran	N = 100 Students Gender not reported *not reported	Yes, N = 54 Trained Red Cross rescue workers	Cross-sectional	Earthquake	3 months	Questionnaire, SCL-40 and Stress Related Growth Scale	PTSD General health Anxiety sensitivity	34% met criteria for PTSD. 5.5% of the trained rescue personnel and 2.8% of the fire fighters. Volunteers are more vulnerable and Anxiety Sensitivity is a contributing factor.
5 Karanci et al., 2005	Turkey	N = 100 66% male 34% female *not reported	Yes, N = 100 Had previously belonged to a volunteer organisation	Cross-sectional	Earthquake	4.5 Years	Questionnaire, IES-R and State Trait Personality Inventory form Y	Post-traumatic Growth General distress	Using problem solving/optimistic and fatalistic coping as well as previously belonging to a disaster preparedness organisation predicted PTG
6 Long et al., 2007	USA	Red Cross volunteers N = 3055 36% male 64% female *50.5% 91% were volunteers	No	Cross-sectional	September 11th attack in New York	1 year	Interviews, developed questions Questionnaire Modified PTSD Symptoms Scale (MPSS), COPE, Anxiety Sensitivity Index	PTSD Anxiety Depression Anger Curiosity	Those directly exposed to disaster stimuli reported no more distress than those not directly exposed.

TABLE 1. (Continued)

7	Mitchell et al., 2004	Canada	N = 13 47% male 53% female ^a not reported	No	Cross-sectional	Aviation disaster	15 months	PTSD Coping Anxiety sensitivity	46% of volunteers with PTSD. Of those directly exposed to human remains, 71% had PTSD. Strongly correlated to duration of exposure and Anxiety Sensitivity. Of indirectly exposed, 17% had PTSD.
8	Paton, 1994	Armenia	N = 21 100% male ^a 70%	Yes, N = 16 Fire fighters	Cross-sectional	Earthquake	Volunteers immediately up return Professionals post- 3 months	PTSD Questionnaire, IES and designed questions	The volunteer group were significantly more likely to perceive interteam relations, communication problems, and publicity as stressors. Fire fighters had significantly higher symptoms of PTSD on 2 subscales.
9	Ursano et al., 1999	USA	N = 54 Air force volunteers 91% male 9% female ^a 76%	No	Longitudinal	Explosion in the USS IOWA	T1: 1 month T2: 4 months T3: 13 months	Identification with the dead, PTSD, Somatization, Obsessive-compulsive symptoms, Interpersonal sensitivity, Depression, Anxiety, Phobic anxiety, Hostility, Paranoid ideation, Psychoticism, Health care utilization	Identification with the deceased is a risk factor for PTSD. Especially identification with the deceased as a friend.

^aResponse in % at measurement or at T1 if the study was longitudinal

*CAPS-1 indicates Clinicians Administered PTSD Scale: A Review of the first ten years of research

The volunteers reported significantly more intrusions and avoidance at 1 month than professionals, and for avoidance volunteers still had significantly higher scores at 13 months. The General Health Questionnaire (GHQ) (Goldberg and Hillier, 1979) scores at 13 months reflected that the long-term negative impact of the event on general health was low. Post-1 year 66% of the volunteers reported "much" or "very much" change in their life meaning compared to 28% of the professional workers. This involved greater sense of appreciation and care for their loved ones, an increased appreciation of life itself, the intensity of life and an increased appreciation for people's strengths. Relation between disaster experience and avoidance was stronger for volunteers than for professionals. Volunteers with little disaster experience scored highest in avoidance while experienced professional helpers scored the lowest. Volunteers were more doubtful on how to carry out their work, felt less prepared and reported having greater difficulties talking about their experiences and reactions following the disaster.

Hagh-Shenas et al. 2005 studied psychological consequences of the Bam earthquake in Iran 3 months after the earthquake on professional and volunteer helpers. The professionals were divided into firefighters and trained search and rescue personnel. The volunteers came from the local university with no formal disaster training. Volunteers scored higher on PTSD using the Mississippi Scale and on GHQ subscales compared to professionals. 34% of volunteers met criteria for PTSD while only 5.5% of the trained rescue personnel and 2.78% of the firefighters fulfilled the criteria. Those who scored higher on the Anxiety sensitivity Index showed greater adverse psychological effects. With regards to general health the mean for complaints on the physical health subscale, the anxiety subscale and the social functioning subscale was significantly higher in volunteers. The depression subscale was higher compared to the firefighters but not to the trained rescue personnel.

In general the results showed that volunteers are more vulnerable to rescue work than professional workers and that anxiety sensitivity might be a contributing factor.

Karanci et al. 2005 looked at Post-traumatic growth (PTG) among 200 volunteers working on the Marmara earthquake in Turkey. All were survivors of the quake, half of

them previously belonged to a disaster preparedness volunteer organisation, the other half did not. Data was collected 4,5 years post-disaster. Possible factors related to PTG were examined with regression analysis. Results showed that using problem solving/optimistic and fatalistic coping and previously belonging to a disaster preparedness volunteer organisation are significant predictors of PTG.

Long et al. 2007 investigated psychological distress among Red Cross disaster workers one year after responding to the event of September 11. About 90% of the sample consisted of volunteers, 10% was paid staff. No significant differences on outcome measures were found between the two. The results indicated that exposure to gruesome things did not lead to more distress.

Mitchell et al. 2004 looked at the impact of the Swiss Air flight 111 disaster on volunteers. 46% of the volunteers had PTSD 15 months post-disaster. Exposure to human remains resulted in more emotional difficulties. Of the exposed group 71% had PTSD compared to 17% of those not directly exposed. For the latter the disaster experience was often one of growth and personal satisfaction. For those directly exposed, duration of exposure was strongly correlated to frequency and severity of PTSD symptoms. The Anxiety sensitive subscale - psychological concerns, was significantly related to both frequency and severity of PTSD symptoms. Thus, volunteers who were highly fearful of losing control when anxious, were most likely to experience frequent and severe PTSD symptoms. Coping with behavioral disengagement, restraint, alcohol-drug disengagement and suppression of competing activities were significantly associated with more frequent and severe PTSD symptoms. Volunteers who had an opportunity to process their experience and to reintegrate their emotions after the disaster, reported lower levels of distress.

Paton 1994 studied training effectiveness and looked at professionals firefighters vs. volunteers who worked on the aftermath of the Armenian earthquake of 1988. Using schema theory they hypothesized that training effectiveness could be evaluated by assessing the incidence with which event characteristics are perceived as stressors.

The results indicated that training and experience of the firefighters did not prepare them for major disaster work. Contrary to expectations, firefighters were more likely to perceive event demands and characteristics as stressors. They reported symptoms more frequently and at a greater intensity than volunteers.

Ursano et al. 1999 looked at the relationship between identification with victims and PTSD in volunteers working on the USS Iowa naval ship explosion. They were measured longitudinally at 1, 4, and 13 months. The conclusion was that identification with the deceased is a risk factor for PTSD and its symptoms. Identification with the dead as a friend is specifically associated with higher risk for the volunteers.

Discussion

The aim of this review was to study the literature on mental and physical health morbidity amongst disaster volunteers. Nine articles were identified that met the inclusion criteria. Overall this review indicates that regardless of the type of disaster, *volunteering may lead to mental and physical morbidity*. The main findings show that volunteers vary from considerable to high levels of mental health complaints, in particular PTSD. Compared to professional workers volunteers tend to have higher complaint levels more similar to those of direct survivors. Volunteers are often survivors themselves that actively take part in the recovery process. A volunteer was considered to be both an external person who receives basic training either within his/her organisation or an external person with no training, such as walk-in volunteers. The walk-in volunteers are often university students or unemployed people, thus immediately available at the time of a disaster.

Due to the cross-sectional nature of 7 out of the 9 studies it was hard to assume any cause and effect between predictors and outcomes. This review identified the following risk factors for mental health complaints: *Identification with victims* as a friend, *severity and/or length of exposure* to gruesome events during the disaster work

and *lack of post-disaster social support*. Also mentioned were the personality type Anxiety sensitivity, various coping styles, little experience with disaster work and role confusion or ambiguity about what was expected of them.

Identification with victims, particularly as a friend was related to higher rates of PTSD, greater intrusion, avoidance (Cetin et al., 2005; Ursano et al., 1999), somatization (Ursano et al., 1999) and depression, both acutely and long term (Ursano et al., 1999). Cetin et al. 2005 found that volunteers identified more strongly with victims than professionals and scored higher than professionals on intrusion, avoidance and arousal scores for PTSD. Volunteers might identify strongly with victims who often are their neighbours or friends. Ursano et al. 1999 found that younger volunteers were more likely to identify with the victim as a friend. This may be one of the contributing factors for why younger individuals exposed to death and trauma may be at greater risk for negative outcomes. Identification with deceased victims, not rescue work as such may be the main risk factor for PTSD in non-professionals.

Severity and/or length of exposure were assessed in two studies (Long et al., 2007; Mitchell et al., 2004). Mitchell et al. 2004 found a significant relationship between exposure and PTSD symptoms while Long et al. 2007 reported a weak relationship between exposure and PTSD, anxiety, depression and anger. However, Long et al. 2007 did not assess the degree of exposure and it could be assumed that no disaster worker was left unexposed after 9/11 due to the ongoing perceived danger. A dose response relationship between exposure and number of stressors during disasters and subsequent health has been documented (Norris et al., 2002 – Part I; Norris et al., 2002 – Part II). Also, level of exposure to gruesome tasks during disaster work has been linked to increased use of health care facilities (Fullerton et al., 2004) which indicates more complaints. Length of exposure was also found to increase the likelihood of PTSD symptomology (Mitchell et al., 2004). This result is consistent with findings from studies of other types of trauma where length of exposure is related to PTSD (Emsley et al., 2003).

Lack of post-disaster social support - expressed as difficulties to discuss the experience with colleagues or family was found in two studies (Dyregrov et al., 1996; Mitchell et al., 2004). This was related to increased general distress symptoms. In the study of Dyregrov et al. 1996 75% of the volunteers compared to 43% of the professionals experienced such difficulties. Studies have shown that social support is an important facilitator for working through difficult experiences (Brewin et al., 2000; Flannery et al., 1990; Ozer et al., 2003) as well as disaster experiences (Cook et al., 1990) and is even beneficial for PTG (Karanci et al., 2005; Paton, 2005). Social support helps with constructing a narrative and normalizing acute emotional responses. In spite of the beneficial effect of social support found in the past (Brewin et al., 2000; Ozer et al., 2003), perceived and in particular objective support was not explored in most of the studies.

Mitchell et al. 2004 reported that the psychological concerns dimension of the *Anxiety sensitivity* measure was significantly positively correlated to symptoms of PTSD. Those highly fearful of losing control when anxious, were most likely to experience frequent and severe PTSD symptoms. This is supported by Hagh-Shenas et al. 2005 finding that volunteers who scored significantly higher on anxiety sensitivity than professional workers, correlated with higher depression, anxiety and more physical health complaints.

Different *ways of coping* were found to be related to symptoms as previously found in other traumatized populations (Olf et al., 2005). Mitchell et al. 2004 revealed that greater use of behavioral disengagement, restraint coping, alcohol-drug disengagement and suppression of competing activities were significantly associated with more frequent and severe PTSD symptoms. Dyregrov et al. 1996 found that volunteers were more likely to use more denial, active cognitive and behavioral coping measures to sustain their tasks than professional helpers, although they did not specify what the impact was on their mental health. Generally, in the literature, active problem-focused coping styles have been associated with good health outcome, while defensive coping may be protective in the short term to keep functioning but

associated with poor health in the long run due to sustained activation levels (Olf et al., 2005).

Lack of experience with disaster work was reported by Armagan et al. where those with less experience had more PTSD symptoms (Armagan et al., 2006). This is in accordance with the findings of Chang et al. 2003, Guo et al., 2004, and Fullerton et al. 2004 on professional workers. The study of Armagan et al. 2006 varies as such that the volunteers are professionally trained, working outside their own community having traveled from Turkey to Indonesia. Most have training in medicine or other disciplines that are useful in disaster work.

Role confusion or ambiguity on what was expected of them was found by Dyregrov et al. 1996 with regards to volunteers. Paton 1994 found the opposite where professionals reported more role confusion than volunteers. This may reflect the different types of disasters where professionals feel confident in their roles in their daily work (bus accident) but an earthquake setting with thousands of people dead or injured may be new to them. New roles are taken on and the pre-existing structure may not be in place requiring them to perform new tasks or to perform known tasks with higher flexibility than before and thereby stretching their coping ability. Four studies directly compared volunteers to professionals (Cetin et al., 2005; Dyregrov et al., 1996; Hagh-Shenas et al., 2005; Paton, 1994). Although three studies point to a greater physical and mental health impact on volunteers (Cetin et al., 2005; Dyregrov et al., 1996; Hagh-Shenas et al., 2005) one found professionals to have more PTSD complaints (Paton, 1994). This might be because volunteers were measured immediately after the rescue work but the fire-fighters 3 months later. This might open up for influence of life-events, both personal and work related. Life events have been shown to significantly contribute to PTSD symptomatology in professional workers (Renck, 2002; Witteveen, 2007;). However, immediate reactions tend to be higher and gradually decrease with time. Paton suggests that it might be due to their expectation of what is a gruesome event. As discussed before, the disaster setting and the nature

of the event may be important. It might influence variables like control, exposure and role ambiguity. Professionals usually have pre-defined as well as rehearsed roles and they operate within a known structure. Volunteers take on tasks assigned on location, fall into a different structure all the time and are expected to cope with it. The volunteers in the study of Dyregrov et al. 1996 talked about role confusion as being one of the factors experienced. Role confusion can be a significant stressor in volunteers, especially when they have to deal with survivors and bereaved (Bartone et al., 1989).

Unexpectedly, differences between professions arose where complaints of police officers were lower than those of fire-fighters (Carlier et al., 1998; Chang et al., 2003; Marmar et al., 1996; North et al., 2002; Renck et al., 2002). This may be due to differences in tasks during a rescue operation although no study could be found in the literature that had looked into this. Studies commonly group them into a group of “rescue personnel” (Spinhoven et al., 2006). During a disaster, fire-fighters can be sent into partially collapsing or not completely safe buildings, where they may have to put themselves, their colleagues and even the person they are attempting to rescue at some level of risk. They are faced with smoke, heat, fire, unsafe conditions, at times release of hazardous chemicals, threat of explosion, broken glass and great physical strain. On the other hand police officers, during disaster operations, are likely to be engaged in securing the scene, keeping bystanders away, organizing operations and upholding law and order. This difference in tasks puts fire fighters at greater physical risk and sometimes continuously for days. This aspect is worth researching further where fire-fighters and police might have different intervention needs during and after a mission.

Regarding duration of effects, samples participating in longitudinal studies were not approached later than 13 months post disaster, which does not allow for prediction of long time duration. However, longitudinal studies identified one main trend, that the severity of symptoms decreased as time passed (Dyregrov et al., 1996; Ursano et al., 1999). However, what we know from the literature, a subset of people can be affected

for many years posttrauma and these may be the people where interventions are most needed or PTSD may start with onset even after many years (Andrews et al., 2007). In sum, this review has revealed adverse affects on physical and mental health of disaster volunteers. Moreover, an increased impact on volunteers over and above professional rescue workers has been revealed with identification with victims as a friend, severity of exposure to gruesome events during the disaster work and lack of post-disaster social support as the strongest predictors found. Unfortunately, this morbidity has hardly been followed up in longitudinal design studies.

Identifying risk or resilience factors for physical and mental morbidity assists organisations in identifying volunteers who might require being assigned to less demanding tasks or followed up in a specific way post-disaster. Moreover, these factors might be influenced, changed or even removed in certain disaster settings. Scientifically gathered information about them can be used to design appropriate guidelines, interventions, programmatic approaches and training.

Limitations of the review

This review is based on a limited number of studies. More studies would allow for analysing the volunteers further based on type of disaster and level of training. A professional in one country might be classified as semi-professional in another. Volunteer firefighters as an example can vary from one time mission of ill trained and inexperienced group of people to regular, well-trained, frequently responded group of semi-professionals. Such groups, although hardly studied, were not included in this review due to obvious reasons. These results should be reviewed in the light of the limited research available on the topic. However, considering the numbers of volunteers mobilized yearly, we believe this review to be an important addition to the existing literature on disaster workers and that it clearly highlights the need for further researching this topic.

Recommendations for future research

It is remarkable that none of the volunteer studies and only few of the professional rescue worker studies explored variables that have been found predictive of poorer outcomes in professionals who work with trauma on a daily basis. These are factors like neuroticism (Alexander et al., 1991), hardiness (Dyregrov et al., 1996), avoidant coping style (Hull et al., 2002), history of prior treatment for psychological disorders (Carr et al., 1997; Hull et al., 2002), physical injury or threat to life (Lai et al., 2004; North et al., 1999), low social support, lower socio-economic status (Norris et al., 2002; Katz et al., 2002), increased taking of sick leave (Carr et al., 1997), female gender (Andrews et al., 2007; Brewin et al., 2000; Olf et al., 2007) fatigue (North et al., 2002) and young age (Fullerton et al., 2004; Green et al., 1996). Future studies on volunteers should include these risk factors.

The type of disaster e.g. an isolated incident like a bus accident where the infrastructure has not fallen apart as compared to the Tsunami, where whole communities were wiped out is another important element. Also, we must speculate whether reactions to natural disasters are fairly compared to man made disasters that may entail intent to hurt another e.g. the September 11th events. It is important to clearly define the volunteer status, training and the field of action, as well as disaster setting and the nature of the event in order to do comparisons between volunteers and professionals. In some communities unemployment rate can be high before the disaster strikes. Unemployment is seen as a vulnerability factor in itself and people are often unemployed due to an underlying condition e.g. depression, anxiety or somatic complaints (Schuring et al., 2007). This calls for another look at the aspects of volunteers where unemployment may be a large explanatory factor in the volunteers levels of complaints.

There is a long overdue need for developing scientifically based guidelines and/or protocols on how to select, train and support disaster volunteers in order to attend to their health and well-being.

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Chapter 3. Organisational factors and mental health in community volunteers. The role of exposure, preparation, training, tasks assigned and support.

3

Sigrídur Björk Thormar¹

Berthold Paul Rudolf Gersons²

Barbara Juen³

Thorlákur Karlsson⁴

Maria Nelden Djakababa¹

Miranda Olff¹

- 1 Center for Anxiety Disorders, Department of Psychiatry, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands
- 2 Centrum 45, Diemen, The Netherlands
- 3 University of Innsbruck, Innsbruck, Austria
- 4 Reykjavík University, Reykjavík, Iceland

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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 516 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.

Introduction

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 516 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, losing 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 km² 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 516 (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 $\alpha = .88$), and for the three subscales (intrusion: $\alpha = .79$; avoidance: $\alpha = .70$; hyper-arousal: $\alpha = .78$) 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 $\alpha = .71$ for the 14 items), as well as for the anxiety subscale ($\alpha = .76$) but was low for the depression subscale ($\alpha = .53$) 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 $\alpha = .92$ 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 $\alpha = .85, .83, .80, .69,$ 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).

Table 1

Overview of Psychopathology over Time

	6 months	12 months	18 months	
	M	M	M	<i>p</i>
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 ($p < .01$) ($a=**$).

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, followed by exposure to the disaster, tasks assigned during mission, preparation and training 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 – Younger age was predictive for higher anxiety (Table 2). All exposure variables were related to anxiety but none of the tasks had an effect. 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 also contributed significantly to higher 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 - Male gender 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. Carrying out assessment correlated significantly with 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.

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

	<i>Subjective health</i>							
	<i>PTSD</i>		<i>Anxiety</i>		<i>Depression</i>		<i>complaints</i>	
<i>R² Step 1</i>	.003		.021		.031		.032	
<i>R² Step 2</i>	.078		.107		.061		.091	
<i>R² Step 3</i>	.158		.154		.124		.178	
<i>R² Step 4</i>	.211		.231		.157		.223	
<i>Step 5</i>	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*

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

	<i>PTSD</i>		<i>Anxiety</i>		<i>Depression</i>		<i>Subj. health complaints</i>	
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/ 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
Info 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 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
<i>R</i> ²	.27		.33		.22		.27	
<i>F</i>	2.53***		3.42***		1.90**		2.43***	
<i>dfs</i>	24, 191		24, 191		24, 191		24, 183	

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

Discussion

In this longitudinal study, we assessed the mental health impact of a large scale earthquake on 516 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-Hoeksema, 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, Skrandal, & Solberg, 1996) and promote a sense of competence and self-esteem (Kivela, 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; Olf, 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 et 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).

Chapter 4. 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

4

Sigridur Bjork Thormar¹

Berthold Paul Rudolf Gersons²

Barbara Juen³

Thorlakur Karlsson⁴

Maria Nelden Djakababa¹

Miranda Olf¹

- 1 Center for Anxiety Disorders, Department of Psychiatry, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands
- 2 Centrum 45, Diemen, The Netherlands
- 3 University of Innsbruck, Innsbruck, Austria
- 4 Reykjavík University, Reykjavík, Iceland

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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 516 Indonesian Red Cross volunteers was assessed using the Impact of Event Scale-Revised and the Subjective Health Complaints Inventory. Factors analysed 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.

Keywords: disaster, volunteer, PTSD, subjective health, sleep quality, peri-traumatic distress, loss of resources

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 [1]. 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 [2]. 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 [3-12] where the most commonly reported complaints are PTSD symptoms [3-7] and although less studied, subjective health complaints [8-9]. The prevalence of PTSD symptoms has varied from 5% to 40% in this group [10] and studies vary considerably with respect to the nature of the disaster, relevant health outcomes and type of disaster work [8].

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 [13] 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 [13-16] 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 [7, 17], in police and other first responders [12]. However, recent studies have questioned the effect of peri-traumatic distress on PTSD development [18].

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 [19]. 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 [8].

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 [20-22] as sleep is frequently disrupted in the aftermath of a

traumatic event [23]. 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 [24-26]. 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 [27].

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.

Method

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 6,000 people were killed, 37,000 injured and hundreds of thousands lost their homes, with the overall damage estimated at 3.1 billion US\$ [28]. 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 516 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).

TABLE 1. Yogyakarta Volunteers' Demographics

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

Note: Data was missing on some demographics

Measures

Symptom levels of Post-Traumatic Stress were measured using the Impact of Event Scale – Revised (IES-R) [29] 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 [30]. The IES-R demonstrated high internal consistency at both 6 months (Cronbach's $\alpha = .88$) and 18 months ($\alpha = .91$). This scale is the most commonly used tool measuring post-traumatic effects internationally [31], demonstrating adequate psychometric properties in western and eastern cultures [32-33].

Subjective health complaints were measured using the Subjective Health Complaints Inventory (SHC) [34] at 6 and 18 months post-earthquake. With 29 questions, the scale measured severity of complaints in the last month on a 5-point Likert scale from 0 to 4 ranging from "not at all" to "seriously" [34]. The value of the subscales is computed by dividing the sum of items by the number of items. Cronbach's α was .92 for the total scale, categorized into five factors: musculoskeletal,

pseudo-neurology, gastrointestinal problems, allergy, and flu (Cronbach's $\alpha = .85, .83, .80, .69,$ and $.73$ respectively). The inventory has shown to be valid in different cultures [35-38].

Loss of resources was measured at 18 months using the occurrence measure on the Traumatic Exposure Severity Scale (TESS) [39]. It assesses dimensions of exposure to an earthquake in adults with 28 items organized into 5 factors: resource loss, damage to home and goods, personal harm, concern for significant others and exposure to the grotesque. Cronbach's alpha on the resource loss subscale was $\alpha = .76$ and for the total scale, $\alpha = .83$. The answers are based on a yes/no response. The questions of the loss of resource scale measured whether, post-earthquake, the volunteer had needed to spend the nights somewhere other than in their home; whether they had lacked food, water, clothes and shelter or suffered financial difficulties and received financial aid.

Peri-traumatic distress was measured with the Peri-traumatic Distress Inventory (PDI) was measured at 6 months. With 13 items, it measures (retrospectively) the quality and intensity of emotional responses experienced during and immediately after a critical incident (range 0-52) [40]. It was developed to obtain a quantitative measure of the level of distress experienced. The response format is a 5-point Likert scale ranging from 0 to 4 (0 = not at all to 4 = extremely true). The PDI demonstrated high internal consistency for the total scale at 6 months (Cronbach's $\alpha = .81$) and has been validated in the Asian culture with high internal consistency, acceptable reliability and high concurrent validity [41].

Sleep was measured at 6 months using the sleep quality subscale of the Symptom Checklist-90R (SCL-90R) [42]. It has 3 items, rated over the last week, and includes difficulties falling asleep, awakening too early in the morning, and restless or disturbed sleep (Cronbach's $\alpha = .69$). Lower ratings indicate lower quality of sleep. The SCL-90-R is a self-report instrument widely used to assess psychopathology in community and medical samples [43-45]. Hours of sleep (at 6 months) was also measured with four categories: 2-4 hours, 4-6 hours, 6-8 hours, and more than 8 hours per night.

Level of personal affectedness was used to divide the volunteers into three different groups according to their level of affectedness. It was assessed with one question at 6 months: Do you consider yourself to be an a. External helper coming from outside the area, b. External helper but also personally affected due to family or close friends being affected, or c. Directly affected helper.

Procedure

After the board of the Indonesian Red Cross gave approval for the study and provided access to the volunteers, the questionnaire was piloted with 30 volunteers who worked on post-tsunami operations in 2004 for feasibility and cultural appropriateness. After feasibility and cultural appropriateness was established, invitation to join the study was made by the local Red Cross branch. Next, volunteers were introduced to the study procedure in introductory meetings and offered the right to decline participation before and after giving informed consent. Finally, the questionnaire was translated into Bahasa Indonesian by bilingual Indonesian trauma psychologist and re-translated to control for any problems with translations. The data presented in this report were collected from January 2007 until January 2008.

Data analysis

We assessed the relation between key covariates using ANOVA and multiple regression with IES-R and SHC as outcomes. Correlation between outcomes was max .48, variance in one outcome explained by the other not exceeding 25%. The following variables were entered in six steps in a hierarchical regression analysis predicting the outcomes in order of importance (using the Bonferroni correction to reduce the chances of type 1 errors) based on support found for them in the literature: Step 1: Demographics (gender)(neither age nor education were significant in relation to the outcomes); Step 2: PTSD at 6 months; Step 3: Peri-traumatic distress; Step 4: Quality of sleep; Step 5: hours of sleep and Step 6: Loss of resources. The assumption of no multi-collinearity was not violated as the correlation between the independent variables were all well below $r = .80$. In addition, tolerance was well above .200 in all cases (the range was

.940 - .975), which indicates also the absence of multi-collinearity. In addition to no multi-collinearity, three assumptions of multiple regressions for each of the two outcomes were assessed. First, the Durbin-Watson test of independence of errors was well above 1 and below 3 in all cases (the range was 1.81 - 2.03). Second, inspecting regression standardized scatterplot of the residuals and predicted values (z_{resid}/z_{pred}) for each outcome revealed no indication of heteroscedasticity. Finally, the normal plot of the regression standardized residuals showed that the errors were sufficiently close to a normal distribution in all cases.

Results

Subjects

In total, 877 volunteers were active in the operation. The PMI managed to contact 518 volunteers for this study. There were 12 volunteers who declined participation for undisclosed reasons, leaving 516 for the first assessment (350 male). The majority of the tested volunteers were male, younger than 30 years old with a mid-level education (Table 1).

At the 18 months measurement, the participation rate was 78%. No difference was found between participants and drop-outs on demographics and outcomes. For PTSD symptoms: $t(468) = 0.406, p = .685$; for subjective health complaints: $t(450) = 0.561, p = .575$.

Table 2 shows the prevalence of resource loss amongst the volunteers, indicating that resource loss was always related to higher value of PTSD symptoms, significantly in 5 out of 6 times. The same could be said for subjective health complaints although it only was significant in 3 out of 6 questions. In addition to resource loss, 49% of the volunteers reported having had damage to their home and 33% needed to relocate as their house was structurally unsafe, 5% were physically injured in the quake, 24% had family members physically injured and 25% had family members or someone close to them buried under rubble. Furthermore, 47% of the volunteers reported uncertainty about the welfare of their loved ones. Exposure to dead bodies or body parts was reported by 58% of the volunteers and 34% heard cries

of trapped people. The above types of exposure fit criterion A1 of PTSD symptoms (DSM-V).

TABLE 2. *Volunteers Loss of Resources as a Result of the Earthquake*

In the days following the earthquake did you:		N (277)	PTSD symptoms	Subjective health complaints
		%	M	M
Have to spend the night somewhere else than in your home?	Yes	62.2	24.0	20.2
	No		20.9	19.4
Need food and water aid?	Yes	48.5	25.7***	21.3
	No		20.2	18.5
Need clothes aid?	Yes	22.2	27.6**	24.1**
	No		21.5	18.7
Need shelter?	Yes	28.6	26.0**	21.3
	No		21.6	19.2
Suffer financial difficulties as a result of the earthquake?	Yes	46.0	26.3***	22.3**
	No		19.9	17.8
Need financial assistance from others due to hardships caused by the earthquake?	Yes	39.3	26.1***	22.1*
	No		21.0	18.5

* $p < .05$, ** $p < .01$, *** $p < .001$ between the Yes/No categories.

At 6 months post-earthquake, 28 % of the volunteers reported a high level (above cut off score of 33) of PTSD symptom severity and 20.5% at 18 months. At 18 months the subjective health complaints were 19.78, ($SD = 13.72$). The subscales had the following results: Flu 2.03 (1.51); Musculoskeletal 7.47 (5.02); Pseudo Neurological 5.69 (4.45); Gastro intestinal 3.71 (3.94).

Prediction of PTSD symptoms and subjective health complaints

Multiple regression was performed with the variables gender, peri-traumatic distress, quality of sleep, hours of sleep and loss of resources as predictors of the long term (18 months) outcomes for PTSD symptoms and subjective health complaints, while controlling for symptoms at 6 months. An ANOVA analysis was carried out to compare differences in PTSD symptoms and subjective health symptoms depending on levels of the volunteers' affectedness.

PTSD symptoms. Gender, hours of sleep and peri-traumatic distress were not related to PTSD symptoms when controlling for symptoms of PTSD at 6 months (see Table 3). In total 27% of the variance in PTSD symptoms was explained (R^2 of .27, $F(4, 220) = 13.01$, $p < .001$), with as significant predictors sleep quality (adding 2% of explained variance) and loss of resources, explaining another 3%. To further explore the relationship we tested whether resource loss could be a mediator between peri-traumatic distress and PTSD symptoms. Although significant correlations between all variables were present, resource loss was not a significant mediator between PDI and PTSD symptoms, $F = 10.04$, $p = .226$.

Post hoc testing showed that even when excluding the sleep related items from the IES-R (items 2, 15 and 22) the correlation between low sleep quality in the aftermath of the disaster and high symptoms of PTSD symptoms at 18 months remained significant, $r = .28$, $p < .01$. The presence of the three questions on sleep in IES-R, therefore, does not seem to explain the significant effects of sleep quality on PTSD symptoms. The ANOVA showed no differences in PTSD symptoms between external volunteers (coming from outside the area) ($N=98$), those indirectly affected ($N=110$) and the volunteers who were directly affected by the disaster ($N=123$), $F(2,213) = .333$; $p = .717$.

TABLE 3. Multiple Linear Regression of Prognostic Indicators at 6 Months of PTSD Symptoms at 18 months

	N	Step 1 β	Step 2 β	Step 3 β	Step 4 β	Step 5 β	Step 6 β
Gender	472	-.00	-.03	-.03	-.03	-.03	-.02
PTSD 6 months	471		.47***	.47***	.41***	.41***	.39***
Peri-traumatic distress	470			.01	-.01	-.01	-.01
Sleep quality	401				-.16*	-.16*	-.13*
Hours of sleep	456					.02	.02
Loss of resources	277						.16**
R^2		.00	.22	.22	.24	.24	.27
F		.00	31.14***	20.67***	17.24***	13.75***	13.01***
ΔR^2			.22	.00	.02	.00	.03
ΔF			62.30***	.01	5.62*	.07	7.32**

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

Subjective health complaints. Gender was significantly related to subjective health complaints at 18 months, R^2 of .03, $F(1, 211) = 6.24$, $p < .01$, with females reporting more complaints (see Table 4). Sleep showed the same relation to subjective health as to PTSD symptoms where only the quality of sleep had a significant effect on subjective health complaints, explaining 3% of the variance but hours of sleep, again had no effect. The total model explained R^2 of .31, $F(4, 211) = 23.34$, $p < .01$.

In the last step, loss of resources did not add significantly to the explanation of variance for subjective health complaints resulting in the total model accounting for 31% of the variance. The ANOVA showed no differences with regards to subjective health complaints between external volunteers, those indirectly affected and those volunteers directly affected by the disaster, $F(2,202) = .030$; $p = .970$.

TABLE 4. Multiple Linear Regression of Prognostic Indicators at 6 Months of Subjective Health Complaints at 18 months

	N	Step 1 β	Step 2 β	Step 3 β	Step 4 β	Step 5 β	Step 6 β
Gender	472	.17*	.11	.11	.11*	.11*	.11*
Subjective health (6 m)	453		.50***	.49***	.41***	.41***	.41***
Peri-traumatic distress	470			.04	.02	.02	.01
Sleep quality	401				-.20**	-.20**	-.19**
Hours of sleep	456					-.02	-.01
Loss of resources	277						.06
R^2		.03	.28	.28	.31	.31	.32
F		6.24*	40.13***	26.75***	23.34***	18.60***	15.63***
ΔR^2			.25	.00	.03	.00	.00
ΔF			71.91***	.29	9.73**	.06	.85

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

Discussion

This is the first longitudinal study of disaster volunteers which explores PTSD symptoms and subjective health complaints and predictors of these outcomes. It is also the first study that allows for comparison in symptoms between volunteers who are directly affected by the disaster and those who came from outside the area to volunteer in the operation thereby providing an insight of how much of the psychopathology may be attributed to the work itself and how much may come from the level of personal affectedness.

As shown in this study, the long-term levels of PTSD symptoms in volunteer disaster workers were found to be considerably higher compared to samples of professional workers [3-4, 46], although due to differences in methodologies, that conclusion cannot be rigorously supported. PTSD symptoms were in the same range [47-49] or somewhat lower [50], than those found for community members affected by earthquakes. Interestingly, we were able to show that working as a volunteer in a disaster area may be an independent contributor to symptoms of PTSD and subjective health complaints as there was no difference in symptoms between those personally affected by the disaster and those who came from outside to volunteer.

Differences have previously been found between different types of emergency workers when Perrin et al. (2007) studied rescue workers at the World Trade Center and found that PTSD diagnostic levels were much lower for police workers (6.2%) than for unaffiliated volunteers (21.2%) [51]. Advanced levels of training and organisational support may be protective factors for professional workers [46, 51] and many of the disaster volunteers will have volunteered as a response to the disaster, often without training or preparation.

Subjective health complaints in this sample are relatively high especially when compared to a non-disaster Asian sample using the same instrument [52]. The high levels of subjective complaints may partly be explained by the long period of physical work, e.g. handling the deceased [53], months of clearing out debris as well as many having to sleep on the street during their work. Several volunteers reported having

worked for more than 24 hours non-stop on some days during the first week or month after the earthquake.

Gender was not related to PTSD in this study although a well-known predictor of peri- and PTSD symptoms in community samples [55]. In spite of that it is not always replicated in female professional workers [55-56]. Our findings might indicate that the study included more resilient females or that there could be a cultural factor in how symptoms are expressed. It has been suggested that Asian cultures might use somatization as an alternative expression of psychological distress following exposure to traumatic events [57] and the females have significantly higher subjective health complaints in the current study.

Our hypothesis regarding the predictive value of disturbed sleep on adverse long term outcome was confirmed with reduced sleep quality being strongly related to both PTSD symptoms and subjective health complaints as has been found in other samples [23-27, 58]. The relation between traumatic event exposure and sleep problems is particularly pronounced among persons who do not recover from initial symptoms, but go on to develop trauma related psychopathologies even 18 months post disaster. Recent research has provided some clarity regarding the nature of sleep disturbances in PTSD where those with PTSD were found to have lighter sleep and elevated Rapid Eye Movement density compared to controls [59]. In fact, it is likely that intact sleep is important for emotional recovery from trauma [60] and sleep disturbances in PTSD might contribute to the development and maintenance of the disorder [61]. In all, the difficult circumstances in which volunteers work in the aftermath of the disaster are likely to interfere with sleep quality and, therefore, interfere even further with emotional recovery from the traumatic events. While a third of the volunteers slept less than 4 hours per night over a period of 6 months, no relation between hours of sleep and the outcomes could be established. To date, volunteer management has focused on hours of rest but not on the quality of rest, e.g. the type of rest facilities volunteers return to at the end of their shift. To make it worse, due to an imposed curfew to prevent looting in the area, the volunteers were sometimes not able to return home and thus had to endure adverse temporary living

conditions, e.g. sleeping at the local branch office or amongst humanitarian aid supplies.

The fact that peri-traumatic distress did not predict PTSD symptoms independently or through the mediation of resource loss is in line with the revisions in DSM-V where Criterion A2 (requiring fear, helplessness, or horror to happen right after the trauma) was removed in DSM-5 as research suggests that Criterion A2 did not improve diagnostic accuracy [18].

Ultimately, even though loss of resources contributed to PTSD symptoms at 18 months it did not predict subjective health complaints as in other samples [16]. The finding of resource loss being a contributor to long-term PTSD symptoms is in line with studies of samples of community members affected by disasters [13-15, 17], but this is the first study to be conducted on community volunteers. These findings support the COR theory of Hobfoll where he states that resource loss is a major factor in predicting long-term psychological impact of stressful events. He highlights the concern that those who have the fewest resources are most affected in the crisis stage, have fewer resources for recovery, and continue to be vulnerable to the further demands that follow in the aftermath of disaster [15].

The main limitation of this study is the lack of data from adequate control groups, which makes it difficult to rigorously attribute the symptoms to the volunteer work. However, the ability to compare between external volunteers and those directly affected by the disaster gives us an opportunity to distinguish between volunteers that were personally affected (thus victims) and those that were not. This provides good reason to assume that the work itself contributed to the long-term symptoms. A comparison with published studies using the same assessment instruments supports our findings that PTSD and subjective health complaints are higher in volunteers than among professional workers [3-4, 46, 52].

Strengths of this study include the longitudinal design, thorough development of the questionnaire and the high response rate of a unique sample of disaster volunteers due to the good registration and management within the Indonesian Red Cross. Although 22% were lost at follow-up, they were not different from those that

completed the 6-month assessment. Disaster volunteers can be a difficult population to study as they are often a part of the affected community, and recruitment later in time can thus be a challenge due to relocation. Others have come from far away to assist in the crisis but have left for their home areas by the time the research takes place. Furthermore, especially in Indonesia where the unemployment rate can be as high as 7% in some areas [62] and more in disaster hit areas, it may be hard for the volunteers to get time off work to participate in a research project.

In conclusion, this is the first study in volunteers showing the possible effect of disaster work alone. Furthermore, it is also the first study to show that reduced sleep quality is strongly related to long term PTSD symptoms and subjective health complaints, over and above 6 month symptom levels. Volunteers might be more vulnerable than professional rescue workers, but they may be a more resilient group compared to community survivors, especially the females. This might be the reason for them to volunteer to begin with, or volunteering may help them remain more active and in control and thereby protecting them from adverse mental health outcomes. Future research should focus on understanding what aspects of volunteering makes the volunteer vulnerable to complaints, e.g. the preparation and training, the tasks carried out or the quality of supervision. Furthermore, differences between community survivors and volunteers and the aspect that may make the volunteers more resilient than their fellow community members also deserve further exploration.

These findings may need to be considered within future revisions of the Inter Agency Standing Committee (IASC) Guidelines on the mental health of volunteer and professional disaster workers [63]. This study shows opportunities for intervention for organisations active in disaster work, for instance, by providing screening and supporting volunteers' basic needs, especially those that have lost or lost access to many personal resources, such as proper sleeping facilities. Disaster preparedness is vitally important and relies significantly on volunteer capacity, particularly in developing countries where statutory services are less developed. Attention to good volunteer mental and physical health is thus critical for humanitarian agencies.

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The authors declare that they have no conflict of interest.

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Chapter 5. Latent growth mixture model analysis of PTSD symptoms in disaster volunteers. The role of self-efficacy, social acknowledgement and tasks carried out.

5

Sigrídur B.Thormar MSc¹,

Marit Sijbrandij, PhD^{2;3},

Berthold P.R. Gersons, MD, PhD³,

Van de Schoot, A.G.J.⁴,

Barbara Juen, PhD⁵

Thorlakur Karlsson, PhD⁶

Miranda Olf, PhD^{3;7}

- 1 Department of Psychiatry, Acad
Amsterdam, Amsterdam, The Netherlands
- 2 Department of Clinical Psychology and EMGO Institute for Health and Care
Research, Vrije University and Medical Center, Amsterdam, The Netherlands
- 3 Arq Psychotrauma Expert Group – Diemen, The Netherlands
- 4 Utrecht University, Department of Methods and Statistics, The Netherlands
and North-West University, Optentia Research Program, Faculty of
Humanities, Vanderbijlpark, South-Africa
- 5 Department of Psychology, University of Innsbruck, Innsbruck, Austria
- 6 Department of Psychology, Reykjavík University, Reykjavík, Iceland
- 7 Department of Psychiatry, Academic Medical Center, University of
Amsterdam, Amsterdam, The Netherlands^o

Submitted

Abstract

Millions of volunteers serve during disaster rescue operations, with 24 - 46% risk of developing post-traumatic stress disorder (PTSD). It is yet unclear what types of symptom trajectories develop and how these may differ between core and non-core (newly joining after the disaster) volunteers and which pre-, peri- and post-trauma risk factors predict trajectories. Symptoms of PTSD were assessed at 6, 12 and 18 months post-earthquake in 449 community volunteers in Yogyakarta, Indonesia. Gender, age, education, previous mental health service use, self-efficacy, social acknowledgment and type of tasks were assessed at 6 months. In both core and non-core volunteers, two PTSD trajectories emerged: (1) resilient (N=408; 90.87%), and (2) chronic (N=41; 9.13%). In both trajectories, core-volunteers had fewer symptoms of PTSD than non-core volunteers. Core volunteers in the chronic trajectory were characterized by having sought prior mental help, reported lower levels of self-efficacy and social acknowledgment, and were more likely to have provided psychosocial support to beneficiaries. The results emphasize the importance of providing adequate support especially to the large number of non-core volunteers involved in disaster recovery operations.

Introduction

The volunteer workforce of the International Red Cross/Red Crescent reaches 30 million each year in disasters alone and more through community development initiatives that provide vulnerable people with access to humanitarian services (International Federation of Red Cross -).

In emergency response volunteers take on various tasks, e.g.: first aid, evacuation of civilians, removal of the deceased and psychosocial support. Exposed to horrific scenes such as multiple deaths, traumatic injuries of civilians, friends and family, volunteers often work under unsafe, physically demanding working conditions (Volunteering in emergencies, 2013). Especially, body recovery (Epstein, Fullerton, & Ursano, 1998) and listening to others' critical experiences (Collins & Long, 2003) may have short and long-term negative mental consequences, such as post-traumatic stress disorder (PTSD). PTSD is characterized by a history of exposure to traumatic events and symptoms from each of four symptom clusters: intrusion, avoidance, negative alterations in cognitions and mood, and alterations in arousal and reactivity. For a diagnosis of PTSD these symptoms have to be present for more than one month and cause significant distress (American Psychiatric Association, 2013).

Estimated prevalence of PTSD in professional disaster workers varies between 5 - 40% (Galea, Nandi & Vlahov, 2005) with higher prevalence in Asia (Berger et al., 2012) and in volunteer disaster workers between 24 - 46% (Thormar et al., 2010; Haraldsdóttir, Gudmundsdóttir, Romano, Þórdardóttir, Gudmundsdóttir & Elklit, 2014).

Significant variations in course of symptoms among different populations, events and community contexts have been documented (Bonanno & Mancini, 2008; Hobfoll et al., 2009; Norris, Tracy, & Galea, 2009; Johansen, Wahl, Eilertsen, Weisæth, 2007; Wikman, Bhattacharyya, Perkins-Porras, & Steptoe, 2008). Symptoms of PTSD tend to decrease across time (Cukor, Wyka, Mello et al., 2011; Galea et al., 2005) although studies have also shown a delayed onset of symptoms or increase from subclinical to clinical PTSD levels (Andrews, Brewin, Philpott, & Stewart, 2007; Smid, van der Velden, Gersons, & Kleber, 2011). More recently studies have started to emerge that attempt to identify various PTSD trajectories within a specific trauma

sample finding that one trauma sample can show from two to six PTSD symptom trajectories but mainly recovery, resilient, chronic and delayed onset (Armour, Shevlin, Elklit, & Mroczek, 2011; Bonanno et al., 2012; Dickstein, Suvak, Litz & Adler, 2010; Galatzer-Levy et al., 2013; Hobfoll et al., 2009; Lowe & Rhodes, 2013; Maercker, Gähler, O’Neil, Schützwohl, & Müller, 2013; Norris et al., 2009; Orcutt, Erickson, & Wolfe, 2004; Pietrzak, Van Ness, Fried, Galea & Norris, 2013; Pietrzak et al., 2014; Santiago et al., 2013). Only one study has looked at trajectories of symptoms in disaster volunteers (Pietrzak et al., 2014). The literature on resilience, defined interchangeably as the capacity for, process or outcome of successful adaptation after trauma or severe stress (Norris et al., 2009; Southwick, Bonanno, Masten, Panter-Brick, & Yehuda, 2014), has started to explore resilience as one of the PTSD trajectories or as one member of a set of possible trajectories that may follow exposure to trauma or severe stress (Layne, Warren, Watson, & Shalev, 2007; Norris et al., 2009).

Former studies on disaster volunteers have assumed that the sample is homogeneous (Thormar, 2010). However, most volunteer samples are not homogeneous. When responding to a disaster, generally two groups of volunteers can be distinguished. Core-volunteers, existing members of an aid agency before the disaster occurred and non-core volunteers, mostly local citizens who have joined the aid agency in response to the disaster. Non-core volunteers may easily comprise half of the volunteers or even more. Core-volunteers have higher levels of training and disaster work experience, are more familiar with the organization’s structure, support system and internal network. No studies have examined PTSD trajectories of core vs. non-core volunteers involved in disaster work and their associated variables.

Pre-trauma predictors for PTSD in the various groups of emergency professionals are female gender (Olf, Langeland, Draijer, & Gersons, 2007; Christiansen, & Hansen, 2015), younger age and single status (Fullerton, Ursano, & Wang, 2004), level of preparation and/or training (Alvarez & Hunt, 2005), self-efficacy (the belief about one’s own abilities to overcome difficulties after exposure to a traumatic event) (Hirschel & Schulenberg, 2009), levels of social support (Reiffels et al., 2013) and the personality trait neuroticism (Engelhard, van den Hout, & Kindt, 2003).

Peri-trauma predictors, occurring during and immediately after the trauma for PTSD are peritraumatic dissociation (Alvarez & Hunt, 2005; Birmes et al., 2003) although this was not found for disaster volunteers (Thormar, Gersons, Juen, Karlsson, Djakababa, & Olf, 2014), level of exposure to gruesome things such as performing body recovery (Epstein, et al., 1998) and level of supervisor support (Tak, Driscoll, Bernard, & West, 2007).

Finally, post-trauma predictors can be tragic life events (Epstein et al., 1998), alcohol use (North et al., 2002), social support (Olf, 2012) and social acknowledgment (Southwick, Morgan & Rosenberg, 2000), which is how a person perceives individuals and/or society's reaction to their difficult experiences (Maercker & Mueller, 2004). Social acknowledgement differs from social support in such that it includes the complete societal context and not only the support from a person's close environment (Maercker et al., 2004).

In this longitudinal cohort study, 516 Indonesian Red Cross – Palang Merah Indonesia (PMI) – volunteers responded to a large earthquake in the area of Yogyakarta, in May 2006. The quake caused 5,782 deaths, 36,299 injuries, 135,000 houses damaged, and an estimated 1.5 million left homeless (Evidence based approach to emergent issues in Asia, 2014). We examined whether core and non-core volunteers differ with respect to PTSD symptom trajectories after working in the disaster area and whether trajectory membership was predicted by gender, age, education, prior history of mental health service use, self-efficacy, social acknowledgment and the type of tasks performed during the rescue work.

Method

Participants and procedure

Medical Ethical Approval was sought from the Indonesian Institute of Sciences who referred the decision to the board of the Indonesian Red Cross, which approved the study.

All instruments were translated to Bahasa Indonesian and independently back-translated by bilingual English/Indonesian psychologists from PULIH center for

trauma, Jakarta. The questionnaires were piloted under 30 volunteers in June 2006 who had worked on the 2004 Asian Tsunami operation 2 years earlier for cultural applicability and to allow for relevant questions to be included.

The study was administered in January and June of 2007 and in January of 2008. The recruitment took place via 8 branches of the Indonesian Red Cross: Yogyakarta city, Gunung Kidul, Sleman, Bantul, Kulon Progo, Klaten (central Java) and Magelang (central Java) as well as Jakarta where the volunteers were approached through a letter of invitation. A study co-ordinator was appointed who made sure volunteers (both core and non-core) were informed about the study and the right to participate or decline. Afterwards, informed consent was obtained and no reimbursement was given. An attempt was made to contact all 877 volunteers who responded to the earthquake, however, 298 volunteers had moved away and/or changed their contact information and 63 volunteers were away for work and unable to join the study. Based on the time the volunteers reported as the start of their volunteer time, a distinction was made between, core and non-core volunteers. Data on starting time was missing for 65 volunteers and for two participants no information was available on the IES measures. The total sample size used for the LGMM analyses was 449. Non-core volunteers started in April / May of 2006 or when the small eruption started in Mountain Merapi which was followed by the earthquake in the surrounding area a month later ($n = 222$) and core volunteers had already joined the Red Cross earlier ($n = 229$).

Thus, participants ($n = 449$ surveyed at 6 months (Time 1) represented 59% of the volunteers who responded to the earthquake. The full cohort was re-contacted twice with a similar paper and pencil survey at 12 months (Time 2) and at 18 months (Time 3) post-earthquake. At the second measurement point, post-12 months, the return rate was 84% and post-18 months it was 78% of the post-6 months sample. No difference was found between participants ($n = 449$) and those missing ($n = 67$) on gender ($p = .57$); education, ($p = .12$); having performed body removal ($p = .20$); prior use of mental health services ($p = .14$); age ($p = .74$); social acknowledgement ($p = .17$) and self- efficacy ($p = .86$).

Instruments and Measures

Demographic variables included in this analysis were age, gender and education on three levels; basic education, high school and university level.

Post-traumatic stress disorder (PTSD) symptoms were measured using the Impact of Event Scale – Revised (IES-R) (Weiss & Marmar, 1997). The IES-R is a 22-item self-report instrument that measures intrusion (8 items, e.g., “Any reminder brought back feelings about it”), avoidance (8 items, e.g., “I tried not to talk about it”), and hyperarousal (6 items, e.g., “I felt watchful and on guard”). It yields a total score ranging from 0 to 88, where each item has a 5-point Likert scale (0-4) with low scores indicating lower levels of post-traumatic stress symptoms (Creamer, Bell, & Faille, 2003). The IES-R demonstrated high internal consistency for the total scale (Cronbach’s $\alpha = .88$), and for the three subscales (intrusion: $\alpha = .79$; avoidance: $\alpha = .70$; hyper-arousal: $\alpha = .78$) at six months. This is consistent with previous studies that have found IES-R to have adequate psychometric properties in non-western cultures (Lim et al., 2009; Weiss, 2007).

Self-efficacy was measured with the Indonesian version of the General Self-Efficacy Scale (Schwarzer et al., 1997) a 10-item psychometric scale, each item ranging from 1- 4, designed to assess optimistic self-beliefs to cope with a variety of difficult demands in life. Higher scores indicate higher levels of self-efficacy. The General Self Efficacy Scale has been used worldwide with various cultures (Luszczynska, Scholz, & Schwarzer, 2005). The scale demonstrated high internal consistency for the total scale (Cronbach’s $\alpha = .86$).

Social acknowledgement questionnaire (SAQ) measures individuals’ perception of recognition as survivor or a victim and the perceived support from the complete societal context and not only the support from a persons close environment. A 16-item self report Likert scale, each item ranging 0-3, therefore, the total scale ranges from 0 to 48. Higher scores indicate greater feeling of acknowledgement. The SAQ has three subscales: Recognition as a victim, general disapproval and family disapproval (Maercker et al., 2004). Adjustments were made in co-operation with the scale author where victim was replaced with volunteer, e.g. “I

did not feel recognized for my experience” changed to “I did not feel recognized for my experience as a volunteer”. The SAQ demonstrated moderate internal consistency for the total scale (Cronbach’s $\alpha = .60$).

Other variables. The questions regarding the three tasks: were answered on a yes/no basis i.e. “Were you assigned to the task of: food distribution (yes / no); psychosocial support (yes / no); removal of bodies (yes / no)?”, and for the measure on mental health service use; “Had you prior to this event, sought assistance from a mental health professional? (yes / no)”. According to the Indonesian Red Cross, task distribution among volunteers was consistent.

Statistical analysis

First, to describe the data, independent t-tests and chi-square analyses were used to compare demographic characteristics between core and non-core volunteers.

Second, to identify the number of trajectories for core and non-core volunteers latent growth mixture modeling (LGMM) was applied; an approach to characterize PTSD symptom trajectories (also used by Armour et al., 2011; Bonanno et al., 2012; Galatzer-Levy et al., 2013; Maercker et al., 2013; Orcutt et al., 2004; Pietrzak et al., 2014; Santiago et al., 2013). The software *Mplus* v7.11 (Muthén & Muthén, 1998-2012) was used to explore possible latent trajectories of event response (PTSD symptoms in this study). As dependent variables we used the three sum scores from the IES-R. The variable core and non-core volunteer was used as a grouping factor using the *KNOWNCLASS* option of *Mplus*. We estimated a series of models with increasing number of latent classes (1-4) and we tested whether the variance around the slope should be estimated.

The models were compared using the following indices: AIC, BIC, entropy values, and sample size per latent class. Note that other often used indices, like the VLMR or the BLRT, are not available when using the *KNOWNCLASS* option of *Mplus*. Furthermore, full information maximum likelihood (FIML) was used to deal with missing data and the robust maximum likelihood estimator was used (MLR) to deal with the non-normal distribution of the IES-R variables.

Third, to predict class membership we did not want to include the covariates in the multigroup LGMM model since these variables would interfere with the mixture solution. A better way to proceed would have been to include the covariates as predictors in the model using the tree-step procedure (R3STEP) as developed by Vermunt (2010) so that the covariates are kept outside the mixture part of the model. However, this procedure cannot be combined with the KNOWNCLASS option, but running separate models for core and non-core volunteers resulted in a different mixture solution. Also, due to missing data on the covariates we would lose more than half of the volunteers for these analyses. Therefore, we saved the most likely latent class membership, exported this information to SPSS and ran post-hoc analyses for each covariate separately. Covariates included were: gender, age, self-efficacy, social acknowledgement and tasks carried out during the mission, measured at 6 months between the trajectories.

Results

Core vs. Non-core Volunteers

Independent t-tests showed that core volunteers were significantly older than non-core volunteers, $t(388.24) = -5.34; p < .001$. Chi-square tests showed no difference between core and non-core volunteers with respect to gender or mental health service use prior to the disaster. However, after examining the standardized residuals, it was shown that core volunteers were more likely than non-core volunteers to have only basic education, $\chi^2(2) = 19.81, p < .001$ and to have worked on body recovery, $\chi^2(1) = 28.3, p < .001$. An independent t-test showed no difference between the two groups on levels of self-efficacy or social acknowledgement (see Table 1). Next, we compared the core vs. non-core volunteers with respect to the presence of a probable diagnosis of PTSD (i.e., IES-R total score > 33). At Time 1, fewer core volunteers ($n = 49; 21.4\%$) had a probable PTSD than non-core volunteers ($n = 79, 35.9\%; \chi^2 = 11.59; df = 1; p = .001$). Similar results were found for Time 2 (probable PTSD in 28 (17.4%) core volunteers and 48 (31.4%) non-core volunteers ($\chi^2 = 8.36; df = 1; p = .004$). At Time 3, the number of core volunteers with

probable PTSD ($n = 19, 16.0\%$) did not differ significantly from the number of non-core volunteers with PTSD ($n = 33, 25.8\%$; $\chi^2 = 3.57$; $df = 1$; $p = .059$).

TABLE 1. Baseline characteristics of Core and Non-Core Volunteers (N=449)

	Volunteer status	M (SD)	<i>n</i>	<i>t</i> (df)	χ^2 (df)	<i>p</i>
Gender (M/F) ($n = 447$)	Core		(169/60)		.33 (1)	.57
	Non-core		(166/52)			
Age ($n = 435$)	Core	27.6 (8.4)		-5.34		.000
	Non-core	24.0 (5.6)		(388.24)		
Education ($n = 449$)	Core				19.81 (2)	.000
	Basic education		53			
	High school		115			
	University level		61			
	Non-core					
	Basic education		23			
	High school		153			
	University level		44			
Social acknowledgement ($n = 245$)	Core	30.95 (5.77)		-1.26		.21
	Non-core	30.09 (4.85)		(243)		
Self-efficacy ($n = 446$)	Core	2.97 (.59)		-1.46		.15
	Non-core	2.89 (.56)		(444)		
Mental health service use (yes/ no) ($n = 438$)	Core		17/208		1.39 (1)	.24
	Non-core		23/190			
Provided psychosocial support (yes/ no) ($n = 424$)	Core		17/199		.73 (1)	.39
	Non-core		12/196			
Removed bodies (yes/ no) ($n = 424$)	Core		67/149		28.20 (1)	.000
	Non-core		21/187			

Latent Growth Mixture Modeling (LGGM)

A two-group LGMM was used where the core and non-core variable was used as a grouping factor. The number of latent classes in the model was systematically increased. One to four class unconditional LGMMs (no covariates) were compared but with separate trajectories for core-and non-core volunteers. We also tested whether to estimate the variance around the slope. See Table 2 for the AIC and BIC - values, the entropy values, the sample size per sub-group and the error messages.

TABLE 2. Model comparison of the linear model (n=449).

	Akaike (AIC)	Bayesian (BIC)	Entropy	Sample sizes Non-core volunteers	Sample sizes Core Volunteers
1 class	8455	8500	1	220	229
2 classes	8442	8508	0.806	199/21	205/24
2 classes ^b	8439	8497	0.810	202/18	206/23
3 classes ^a	8437	8523	0.707	107/94/19	113/93/23
3 classes ^b	8438	8516	0.832	202/15/3	203/22/4
4 classes ^a	8436	8543	0.739	105/92/15/8	111/92/22/4
4 classes ^b	8438	8537	0.712	112/82/21/5	119/83/22/5

^a Non-positive definite matrix because of negative slope variance

^b slope variance fixed to zero

The BIC was lowest for the two-trajectory solution for the model with no slope variance. Average latent class probabilities for most likely latent class pattern by latent class pattern are shown for this model in Table 3.

TABLE 3. Average Latent Class Probabilities for Most Likely Latent Class Pattern (Row) by Latent Class Pattern (Column)

	Non-core chronic	Non-core resilient	Core chronic	Core resilient
Non-core chronic	0.772	0.228	0.000	0.000
Non-core resilient	0.014	0.896	0.000	0.000
Core chronic	0.000	0.000	0.806	0.194
Core resilient	0.000	0.000	0.079	0.921

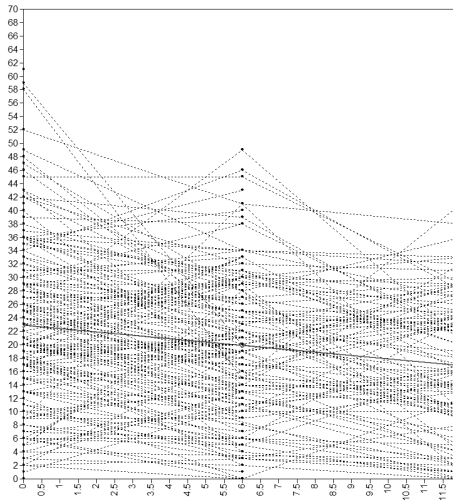
The AIC was lowest for the three class solution, but the third class contained only 3 and 4 cases, which was considered too few for a separate class. We ran the models for the entire data and including a quadratic trend but the model fit was always lower for these models compared to results presented in Table 2. Thus, it was decided that the model with 2 trajectories for each subgroup best represented the data with four trajectories (Table 4).

TABLE 4. *Descriptive statistics for the four trajectories.*

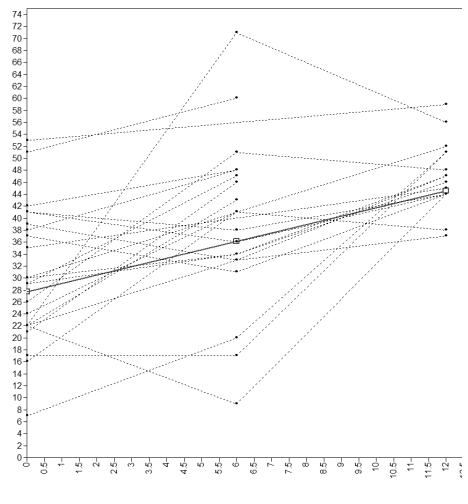
	Resilient (n=206/202)				Chronic (n=23/18)			
	M	SE	95% CI	p	M	SE	95% CI	p <
Core volunteers								
Intercept	22.95	0.96	21.07 - 24.84	<.001	27.66	2.86	22.06 - 33.26	.001
Slope	-0.51	0.09	-0.67 - -0.34	<.001	1.40	0.34	0.74 - 2.07	.001
Non-core volunt								
Intercept	27.90	1.99	23.99 - 31.81	<.001	31.05	9.25	12.93 - 49.18	.001
Slope	-0.49	0.11	-0.70 - -0.27	<.001	0.96	0.634	-0.28 - 2.20	.130

For the core volunteers, the first trajectory consisted of 206 volunteers, who showed moderate initial PTSD symptoms with a significant (slow) decrease over time ($p < .001$). This trajectory was named a “resilient” trajectory and comprise 45% of the core volunteers. The second trajectory consisted of 23 volunteers, who showed high initial PTSD symptoms ($p < .001$) with a significant increase over time ($p < .001$). This trajectory was named a “chronic” trajectory and comprised 5% of the core volunteers.

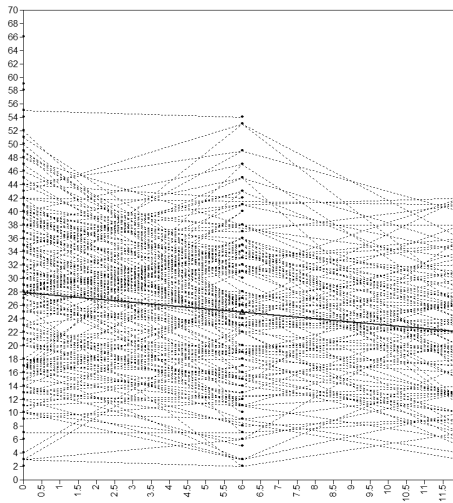
For the non-core volunteers, the first trajectory consisted of 202 volunteers, who showed moderate initial PTSD symptoms ($p < .001$) with a significant (slow) decrease over time ($p < .001$) and comprised 46% of the non-core volunteers. The second trajectory consisted of 18 volunteers, who showed high initial PTSD symptoms ($p < .001$) with a non-significant increase over time ($p = .130$) and comprised 4% of the non-core volunteers. The four mean trajectories with the observed individual values are shown in Figure 1 and an overview of the trajectories in Figure 2.



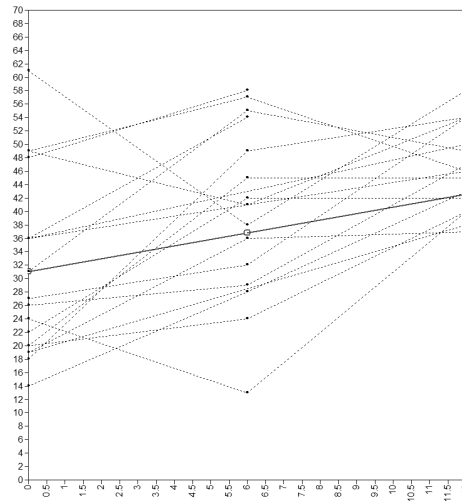
Core Resilient volunteers



Core Chronic volunteers



Non-core Resilient volunteers



Non-core chronic volunteers

Figure 1. Estimated mean trajectories and observed individual trajectories.

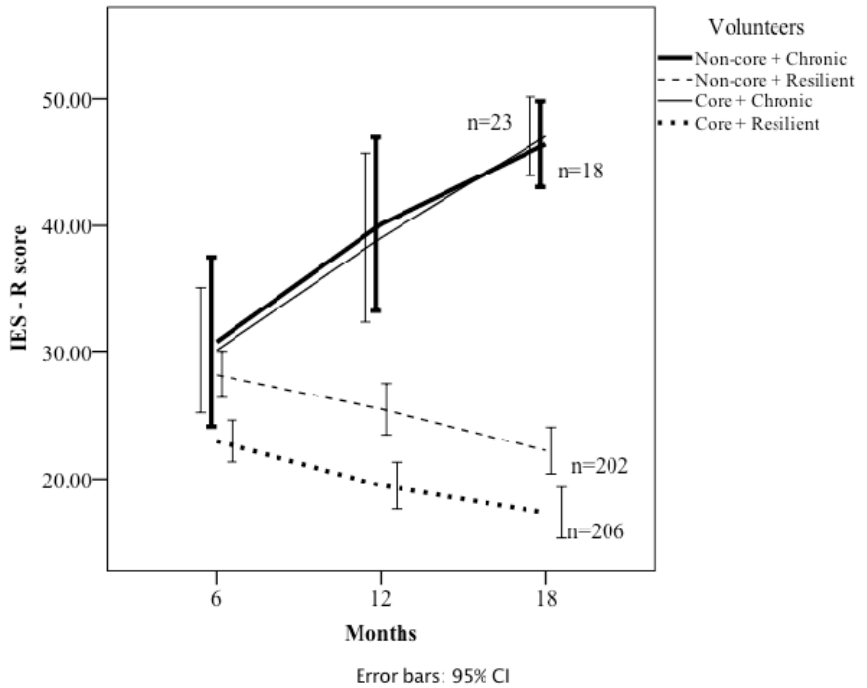


Figure 2. Overview of PTSD trajectories in core- and non-core volunteers

Intercept and slope differences were tested between the two known classes. There was only a significant effect between the intercepts of the *non-core + resilient* versus the *core + resilient* ($p = .01$). The comparisons between the other intercept revealed p -values between .15 - .95. All slopes differed significantly between groups (p 's between .03 - < .001) except for the slope between the groups *non-core + chronic* versus the *core + chronic* ($p = .44$) and between the groups *non-core + resilient* versus the *core + resilient* ($p = .88$).

The most likely class membership was saved and merged with the original data file.

Comparing Trajectory Membership

Next, we compared the four groups (resilient and chronic core volunteers and resilient and chronic non-core volunteers) with respect to gender, age, prior history of mental health service use, self-efficacy, social acknowledgement and tasks carried out during the mission. Chi-square analyses showed that the four groups did not differ with respect to gender. However, there was a significant difference with respect to education ($\chi^2 = 25.03$; $df = 6$; $p < .001$), since the resilient core volunteers were more likely to have only basic education, whereas the resilient non-core volunteers were less likely to have basic education only than the other groups. In addition, the four groups differed with respect to prior mental health service use ($\chi^2 = 11.24$; $df = 3$; $p = .010$). Core volunteers within the chronic trajectory were more likely to have sought prior mental services relative to the other groups. Resilient core volunteers were more likely to have assisted in evacuation, whereas resilient non-core volunteers were less likely to have done so ($\chi^2 = 30.62$; $df = 2$; $p < .001$). Finally, chronic core volunteers were relatively more likely to have assisted in psychosocial support than the other groups ($\chi^2 = 12.12$; $df = 3$; $p = .007$).

Oneway ANOVA's indicated that the four groups differed with respect to age ($F(3,431) = 9.43$; $p < .001$). Post-hoc Bonferroni tests revealed that the resilient core volunteers were significantly older than the resilient non-core volunteers (mean difference: 3.7, 95% CI 1.79-5.61; $p < .001$). There was also a significant difference with respect to levels of self efficacy ($F(3,442) = 3.46$; $p = .016$), with post-hoc Bonferroni tests showing that core resilient volunteers reported higher levels of self-efficacy than core chronic volunteers (mean difference = 0.36; 95% CI 0.02-0.71, $p = .030$). A similar difference was found for levels of social acknowledgment ($F(3,241) = 4.22$; $p = .006$), with post-hoc Bonferroni tests showing that core resilient volunteers had higher social acknowledgment scores than core chronic volunteers (mean difference = 4.14; 95% CI 0.41- 7.87, $p = .021$).

Discussion

This is the first study that examines PTSD symptom trajectories in community volunteers after a natural disaster. We examined 449 Indonesian Red Cross volunteers working in the aftermath of the 2006 Yogyakarta earthquake, distinguishing between core and non-core volunteers. At 6 months post-disaster, 28.5% of the volunteers had PTSD symptom levels reflecting a probable PTSD (based on the cut off of the IES-R), at 12 months this was 24.2% and 18 months post-disaster this was still 21% (core volunteers 16% vs non-core 25.8%). In both the core and the non-core group, two PTSD trajectories emerged: (1) a resilient trajectory (moderate levels of PTSD symptoms with slow decrease over time), (2) a chronic trajectory (higher levels of PTSD symptoms with increase over time). In both trajectories, core-volunteers had fewer PTSD symptoms than non-core volunteers.

PTSD Symptom Trajectories

Unlike other trajectory studies in disaster populations we only found two trajectories. There are studies that have found two similar (not identical) trajectories in other trauma populations (Armour et al., 2012; Orcutt et al., 2004). Pietrzak et al. (2014) in their study among volunteers (or non-traditional workers as they named them) found six trajectories, but their considerably larger sample may have allowed them to identify more trajectories. Most volunteers were assigned to a resistant/resilient trajectory (58.0%) like the volunteers in our study and the remainder exhibiting recovering (12.3%), severe chronic (9.5%), sub-syndromal increasing (7.3%), delayed-onset (6.7%) and moderate chronic (6.2%) trajectories.

The fact that we do not find a recovery trajectory may be explained by 70% of the population being either directly affected (37%) or indirectly affected (33%). This, in combination with the ongoing threatening environment of Mount Merapi continuing to be a threat of eruption, the aftershocks, the socioeconomic situation of high unemployment and low social economic status in the area all render recovery less likely within this timeframe of 18 months. In the only other study on trajectories in

volunteers (Pietrzak et al., 2014) the attack on the World Trade Center, although a devastating event, did not cause system breakdown or massive resource loss to the volunteers themselves. Also, the 8 year prospective follow up might have allowed for enough time to identify late onset as well as severe chronic trajectories.

Predictors of PTSD Symptom Trajectories in core versus non-core volunteers

Gender was a non-significant predictors of PTSD symptoms in spite of gender being a known risk factor for PTSD in community samples (Olf et al., 2007) where females report more symptoms. Our findings are in line with studies on police and military samples (Engelhard, van den Hout, Weerts, & van Doornen, 2009), so possibly female volunteers share characteristics with these groups that render them more resilient. Age was significantly higher in the resilient core group which may indicate that the more resilient core volunteers are those that have been with the PMI the longest and thus with more training and experience. Studies have shown protective effect of preparedness in mitigating risk for PTSD (Johnson et al., 2005) but there are also studies that suggest that preparation and training can be predictors for symptoms when the training and experience did not prepare them for major disaster work (Paton, 2006), which should not be the case in our sample. On the other hand this may be due to demographic differences as young emergency workers have been found to have higher symptoms of PTSD (Witteveen et al., 2007).

Resilient core volunteers were more likely to have only basic education and resilient non-core volunteers less likely to have only basic education. Lower education level has previously been found to predict PTSD symptoms in earthquake survivors (Armenian et al., 2000).

Core volunteers in the chronic trajectory were more likely to have used mental health services prior to the disaster. History of mental health service use has previously been found to predict PTSD symptoms (Norris et al., 2002). This may reflect the cumulative effect of volunteering in disasters and rendering this subgroup less resilient in the face of new disaster work. As expected, and in line with a prior study in community members after a disaster (Hirschel & Schulenberg, 2009), self efficacy was higher in the resilient core volunteers than in the chronic core volunteers. This may reflect a certain

characteristic in those choosing to continuously volunteer in adverse situations, rendering them more resilient when faced with stressors due to their belief that they have the resources to cope with adversity (Bandura 1997; Southwick et al., 2014).

Peri-trauma predictors like providing psychosocial support and removal of bodies are two specifically demanding tasks that put volunteers at risk for mental health problems. Compared to the other three groups, core volunteers in the chronic trajectory were more likely to have provided psychosocial support to the affected. This study is the first to document that volunteers providing psychosocial support may need specific attention themselves. This may be due to secondary traumatisation (Collins & Long, 2003; Hendron, Irving & Taylor, 2011), lack of training to carry out the task (Cyr & Dowrick, 1991) or even support for themselves (Bonanno, Galea, Bucciarelli & Vlahov, 2007). As some of the volunteers are personally affected by the disaster, listening to narratives of others may result in them re-living some of their own experiences. This finding is of particular interest since internationally, the development of psychosocial support programs puts increased emphasis on training volunteers as valuable providers of support after major disasters, and raises awareness about the risk to the providers themselves and the need to support them well.

Resilient core volunteers were more likely to carry out body removal than the other three groups and the resilient non-core volunteers were less likely to have done so. Possibly resilient core volunteers may feel better equipped for removal of dead bodies and thus offered to volunteer for this task.

In line with previous research social acknowledgement, i.e. how a person perceives individuals and/or society's reaction to their difficult experiences (Maercker & Mueller, 2004) was lower in the chronic trajectory than in the resilient trajectory (Solomon, Mikulincer & Flum, 1989; Southwick et al., 2000) and particularly important to core volunteers who may feel more a part of the organization than non-core volunteers.

Strengths and Limitations The high number of participants compared to previous studies in volunteer disaster workers (Thormar et al., 2010) and low attrition over time is a strength. However, for this type of analysis a larger sample may have given more power to find more trajectories. The ability to distinguish between core and non-core volunteers offers new insight into the mental health consequences for this important and understudied community resource. Furthermore, to explore predictors for trajectories adds valuable information that can be used to further enhance volunteer management programs. The first assessment taking place 6 months post-disaster is a limitation and deprives us of the opportunity to study the acute mental health reaction.

Conclusions and Relevance: Trajectories of PTSD symptoms in both core and non-core volunteers include a resilient and a chronic PTSD trajectory, with one fourth of the volunteers reporting high PTSD symptom levels. About 9 % of the volunteers were assigned to the chronic trajectory up to 18 months post-disaster. In both trajectories, core-volunteers had fewer symptoms of PTSD than non-core volunteers. Core volunteers in the chronic trajectory were characterized by having sought prior mental help, reported lower levels of self-efficacy and social acknowledgment, and were more likely to have provided psychosocial support to beneficiaries. The results exhibit the importance of regular screening and assessment for PTSD in both core and non-core volunteers and providing adequate support especially to the large number of non-core volunteers involved in disaster recovery operations and those providing psychosocial support.

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Chapter 6. Post-disaster Psychosocial Support and Quality Improvement: A Conceptual Framework for Understanding and Improving the Quality of Psychosocial Support Programs

6

Michel L.A. Dückers^{1§}

Sigridur B. Thormar²

1 Impact – National knowledge and advice centre for psychosocial care concerning critical incidents, Diemen, the Netherlands

2 Department of Psychiatry, Academic Medical Centre, University of Amsterdam, Amsterdam, the Netherlands

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Abstract

This article is original in that it addresses post-disaster psychosocial support programs from a quality improvement perspective, not from the traditional mental health services viewpoint. Based on a combination of renowned quality models, a framework is sketched that offers chances to better understand and optimize the quality of post-disaster psychosocial service delivery. The quality is reflected in the program's structure, process and outcome. Moreover, quality can be expressed in scores per criterion (i.e. need-centeredness, effectiveness, safety, timeliness, efficiency, and equity) that are proposed to be related to the "attitude" (more passive or active) towards affected people. When quality and attitude are combined in a two-dimensional parabolic model, psychosocial support is preferably found in the middle of the attitude-axis (high quality); extremely passive or active positions are to be avoided (low quality). Well-timed assessments of structure, process and outcome aspects, and associations between them, will help planners, providers and evaluators understand if the optimum is reached, as well as provide guidance for quality improvement.

Keywords

Psychosocial support; disaster; quality of care; quality improvement; framework

Background

What we can learn from the annual World Risk and World Disaster Reports is that communities all over the world are being confronted with large-scale disasters and major incidents (Alliance Development Works, 2011, 2012; International Federation of Red Cross and Red Crescent Societies, 2012, 2013). Some areas of the world are more exposed and vulnerable than others. Disasters like the Japan earthquake in 2011 and the cyclone in the Philippines in 2013 have a severe impact on communities and individuals. Regardless of the local response and recovery capacity, the delivery of high-quality psychosocial services is indispensable. Despite the importance of professional aid after large-scale disasters, volunteers are often the first and main source of support to affected communities. While attention should be given to the safety, well-being and health of individuals, authorities and services have to follow a strategy that makes it possible to meet the needs of as many affected people within a community as possible (Williams et al, 2009).

A planned community intervention - in this article we call this a psychosocial program - can be comprised of (1) basic aid (shelter, safety, food, drinking water, first aid and medication); (2) information (about what has happened, about the fate of loved ones, about normal reactions); (3) social and emotional support (comfort, a listening ear, recognition of grief, compassion); (4) practical help (legal and financial issues, household); and (5) mental health (adequate detection and management of complaints and problems). All these elements are included in leading psychosocial support guidelines for disaster settings (e.g., Bisson et al, 2010; Inter-Agency Standing Committee, 2007; Te Brake et al, 2009; Te Brake & Dückers, 2013; Suzuki et al, 2012; World Health Organization, War Trauma Foundation & World Vision International, 2011). When combined and carried out deliberately, the five elements form a program; a community intervention that can differ in length (weeks, months, years), scope (variation in themes) and organization (number of partner organizations at different levels).

Objective of this article

Many aspects of psychosocial programs are interesting for academics. In this article we address a set of features that we summarize as the “quality” of the program. The vast majority of publications on post-disaster psychosocial support originate from clinical psychology, psychiatry, or other branches of mental health research. What distinguishes the current contribution is that it is written explicitly from a quality improvement perspective. Quality improvement (in healthcare) has been defined as “the combined and unceasing efforts of everyone - professionals, patients and their families, researchers, payers, planners and educators - to make the changes that will lead to better health outcomes, better system performance, and better professional development (learning)” (Batalden & Davidoff, 2007: p 2). Given the nature of psychosocial support, we consider it suitable to slightly modify this definition, by adding “and trained volunteers” after “professionals” (volunteers play a crucial role in the support of affected people), adding “and well-being” after “health outcomes” (the scope is broader than health), and replacing “patients and their families” by “affected ones and the people close to them” (less stigmatic and less restrictive as loved ones can also include friends and colleagues).

Our objective is to present a conceptual framework that can serve as a basis for the further research we deem indispensable to understanding and optimizing the quality of psychosocial support in post-disaster settings. Two relevant issues are explored, based on a combination of internationally renowned theoretical models: (1) What is high-quality psychosocial support? (2) How can the quality of psychosocial support be enhanced? After summarizing the framework, we discuss some challenges for its application.

What is high-quality psychosocial support?

To answer this question we examine common quality concepts. Different quality models can be found in the international literature. We chose to select two categorization schemes that are popular among scholars and quality managers throughout the world.

Structure, process and outcome

Several quality aspects must be taken into account if we want to understand the quality of psychosocial support programs. The first categorization scheme, the “Donabedian model,” is one of the most influential conceptual models in the healthcare quality literature. This model provides a framework for examining health services and evaluating quality. According to the model, information about quality can be drawn from three categories: structure, process and outcome (Donabedian, 1980). “Structure” describes the relatively stable context in which services are delivered, including people, financial resources, tools and equipment. “Process” denotes transactions between clients and providers throughout the service delivery system, activities and technical and interpersonal aspects of the performance. Finally, “outcome” refers to effects on the well-being and health of individuals and populations. One thing to keep in mind is that the three categories should not be mistaken for attributes of quality. Instead, they are the classifications for the types of information that can be obtained in order to infer whether the quality of care is poor, fair, or good. Furthermore, in order to make inferences about quality, there needs to be an established relationship between the three categories; this relationship is a probability rather than a certainty (Donabedian, 1980).

The division in structure, process and outcome, and its postulated relationship, is suitable to examine the quality of psychosocial programs. Psychosocial support guidelines, as mentioned in the first section, focus primarily on structure and process aspects. The structure is reflected, for instance, in the availability of competent service providers (professionals, trained volunteers). In addition, the program should contain a multi-agency planning group, a coordinator, sufficient funding, and should be based on evidence-informed guidelines (integrated in disaster plans that are regularly updated, tested and facilitated). Within this structure recommended actions can take place, embedded in a process that ideally is responsive to the needs and problems of affected people. Here we can think of needs assessments, the sharing of information leaflets, site visits, setup of a memorial, and – for people with symptoms of Posttraumatic Stress Disorder – the provision of trauma-focused cognitive behavioral

therapy or Eye Movement Desensitization and Reprocessing (for other examples of structure and process elements see e.g., Te Brake et al, 2009; Bisson et al, 2010; Witteveen et al, 2012). Regarding the outcome of the program, it is meaningful to collect information on the well-being of people, their satisfaction about received support, the degree to which they feel taken seriously and looked after, and mental health complaints. In a high-quality psychosocial program the structure and process elements should be in line with evidence-informed guidelines, and can ideally be linked to positive outcomes at the level of affected individuals or populations.

Quality criteria

The second categorization is complementary and allows us to go deeper into the essence of quality. In the past decades, several quality features have been distinguished in the international health sciences literature (Donabedian, 1998, Berwick, 2002; Eccles et al, 2009). The six performance criteria formulated by the Institute of Medicine are often used as quality standards (Berwick, 2002; as it is more appropriate to speak of “affected ones” or “beneficiaries” rather than “patients” or “clients” in a disaster context, again, we chose to slightly alter the terminology):

- *Need-centeredness*: provide services that are respectful of and responsive to preferences, needs, and values of affected people, ensuring that their values guide all decisions.
- *Safety*: avoid injuries to people from services that are intended to help them.
- *Effectiveness*: provide services based on scientific knowledge to all who could benefit from them, and refrain from providing services to those unlikely to benefit, thus avoiding both underuse and overuse, respectively.
- *Efficiency*: avoid waste, including waste of equipment, ideas, and energy.
- *Timeliness*: reduce waits and sometimes harmful delays for those who receive and those who provide services.
- *Equity*: provide services without variation in quality because of personal characteristics such as gender, ethnicity, religion, geographic location, and socioeconomic status.

All these criteria are relevant for the specific field of post-disaster psychosocial support. We shall discuss each briefly.

Obviously, need-centeredness is imperative in a context of catastrophe where every event, its potential impact, and every affected individual are unique. Different disaster scenarios may yield a divergence of mental health needs (North, 2010; Bonanno et al, 2010). However, the reality of disaster response and the resources mobilized do not often allow for individual attention, rather the support should be directed at groups of people with similar concerns and needs. Need-centered psychosocial support implies that the focus is on providing services that are respectful and responsive to the needs of groups or communities where the context determines what needs to be done, not just the habit of providers.

In addition, effectiveness and safety are two criteria that, for understandable reasons, are given a great deal of attention in the literature. To increase the likelihood of effectiveness, it is crucial to understand what works, why it works, and to ascertain the absence of adverse effects. For exactly this reason, some experts are critical about, for instance, psycho-education (Wessely et al, 2008), and psychological debriefing (Roberts et al, 2010; Rose et al, 2005).

Timely intervention is essential. After comparing health outcomes of volunteers that assisted after the terrorist attacks on the World Trade Center, Debchoudhury and colleagues (2011) found that lay volunteers' poorer health outcomes were related to more intense exposure to and lack of protection from physical and psychological hazards. Furthermore, the author's emphasized the need to provide timely screening and care (Debchoudhury et al, 2011). After the tsunami in Southeast Asia, Bryant (2006) concluded that inappropriately targeted therapy can compromise recovery and may even exacerbate posttraumatic stress symptoms, particularly if treatment is initiated before grief reactions subside.

In a post-disaster setting, criteria like efficiency and equity both have to do with the allocation of resources that often can be utilized only once, on behalf of one individual, group, location, or purpose. Program managers and service providers are challenged to minimize waste and to realize an equal distribution of support for people

in equal circumstances. Hurricane Katrina showed how difficult this could be. Few Katrina survivors with mental disorders received adequate care. Under-treatment was greatest among respondents who belonged to younger and older age groups, were never married, were members of racial or ethnic minority groups, uninsured, and of moderate means (Wang et al, 2007).

The quality of psychosocial support interventions, or an entire program, can be expressed in scores per criterion. Theoretically, the bundled scores can be ranked on a continuum, ranging from low to high. Top-quality implies that every criterion is fully met. At minimum none of the criteria are satisfied. One can imagine that the extremes are seldom seen. People involved will rate care provision positively or negatively based on a variety of observations and impressions. It is difficult to say where the threshold lies exactly, but there will always be a point where the quality level becomes “unacceptable.” A program then fails to meet people’s needs, and is unsafe, ineffective, inefficient, untimely, and/or unequal.

Attitude towards affected people

Post-disaster psychosocial support is likely to reflect a certain attitude towards people affected and their needs. We can see attitude as a dimension, ranging from extremely passive (waiting, deliberately or even unintentionally doing nothing) to active (outreach, intervention). Then there is “watchful waiting,” an approach in which time is allowed to pass before – following a stepped care approach (Williams et al, 2009; Bisson et al, 2010) – more advanced psychological services are provided, with the purpose to avoid overtreatment. During this time, repeated assessments may be performed to determine if (an alternative) intervention is warranted. Watchful waiting is recommended in situations with a high likelihood of self-resolution or self-recovery, and in situations where the risks of intervention may outweigh the benefits (Meredith et al, 2007).

In our opinion, this fits post-disaster psychosocial support in the recovery phase very well. Nevertheless, in the emergency phase or soon after the event, some service providers, if present at the site, will tend to intervene quickly with mental health

services for people with immediate needs. The wish to do something is tempting in the post-disaster reality and one can doubt whether watchful waiting is realistic in the disruption of the event. On the other hand, the imperative to avoid over-activeness and to stimulate self-reliance is always legitimate. Using watchful waiting as a tool to monitor and follow patterns of complaints implies looking for signals where support and care are appropriate; signals like complaints, questions and observed risks for people's privacy, safety and well-being. Watchful waiting is waiting combined with detection. This is what distinguishes it from extreme passivity, which is, whether deliberate or not, characterized by absence of intervention. Although probably seldom seen after critical events, unless the resources are unavailable in the community, without watchfulness there is always a risk of under-treatment. Extreme pro-activeness on the other hand ignores the capacity for self-resolution or resiliency. This extreme might be as theoretical as its opposite, but some care givers might want to start therapeutic activity before natural normalization has been allowed to take place. The challenge is to stay away from the extremes.

Two-dimensional model

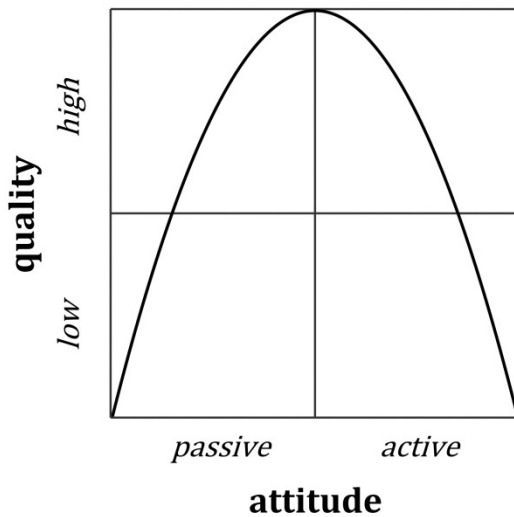
It is interesting to combine the quality dimension (the six criteria) and the attitude dimension. Psychosocial support can vary along both dimensions simultaneously. In the conceptual model (Figure 1) attitude is depicted on the x-axis with a range of passive and active positions. Linked to quality on the y-axis, the possible positions no longer follow straight lines. They are distributed along a parabolic shape, illustrating that waiting or intervening is not problematic until the quality-threshold (the horizontal marker) is passed. On each side of the parabola, the quality deteriorates after crossing the threshold - which is undefined - and the path reaches the bottom. The passive lack of quality is caused by neglect, disregard, and lack of insight, capacity or opportunity. Quality on the active side suffers from over-attention and wasted resources.

Both the passive and active attitudes have reasonable starting points to defend. We can explain this by using the popular resilience concept and other ideas about how

people respond to and recover from health problems (Bonanno et al, 2010). Both attitudes can acknowledge people's capacity for self-recovery or resilience. Based on the viewpoint that intervening is unnecessary and a waste of resources, the passive group suggests holding back in the approach towards affected people believing, "The vast majority is self-reliant and recovers at its own strength." Activists, in their turn, do not accept the chance that people are overlooked, which is a legitimate position as well, believing, "Not everyone is self-reliant or capable of self-recovery." The activist attitude is more common in major disasters where humanitarian agencies often quickly set up a psychosocial program with the aim to strengthen social support and re-establish family links or a sense of normality.

In addition to defensible arguments for both attitudes, the risks are not to be ignored. Coupled with low quality psychosocial services, having an overly passive or active attitude towards affected people is linked to an overestimation or underestimation of resilience respectively (see Table 1). A notable risk of an active attitude is that people are maneuvered into a dependent victim or patient role, with the main thought being: "I am entitled to assistance and compensation" or "I am sick and need treatment." Such thinking may result in stigma, with negative social and public health consequences (Link & Phelan, 2006). This type of thinking may also take away a person's opportunity to experience survival and growth. Likewise, one notable risk of a passive attitude is that affected people feel socially ignored or even abandoned.

Figure 1: Two-dimensional conceptual model



Legend Figure 1: Shown here is how the attitude of caregivers towards people affected by disaster relates to quality. Possible positions of psychosocial care delivery are limited to the parabolic pathway. The route from the curve's top (high quality, middle-attitude) to both bases (low quality, extremely passive or active attitude) is accompanied by quality loss. Theoretically, differences in attitude are unproblematic until the quality threshold is crossed.

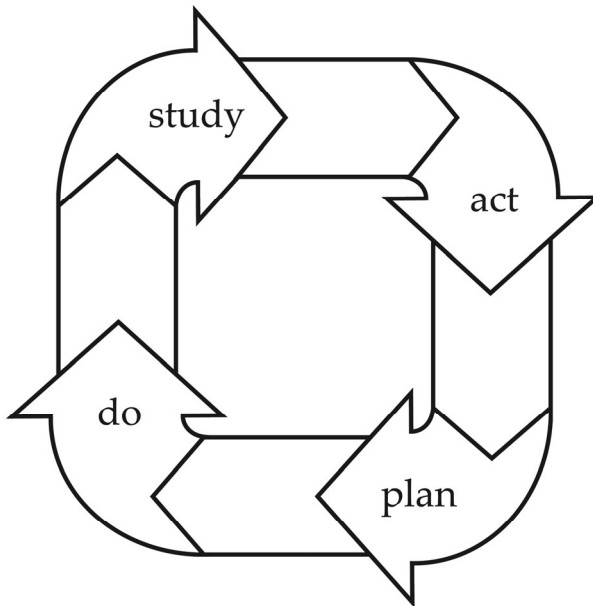
How can the quality of psychosocial support be enhanced?

After this first exploration of what quality means in a post-disaster psychosocial support context, the next step is to consider quality improvement. We defined this as: "the combined and unceasing efforts of everyone - professionals and trained volunteers, affected ones and the people close to them, researchers, payers, planners and educators - to make the changes that will lead to better health outcomes and well-being, better system performance, and better professional development (learning)." These "changes that will lead to" a better structure, process and outcome can take many forms, ranging from reallocation of resources and legislation to training

programs and tool development. Moreover, quality improvement is about continuous and deliberate action to achieve quality goals followed by a check to see if goals are realized. A typical quality improvement strategy seeks to stimulate or maintain improvement based on the on-going application of so-called “plan-do-study-act cycles” (Langley et al, 1996; Berwick, 1998; Taylor et al, 2013). Plan-do-study-act cycles are precisely what their name suggests, a stepwise model to disentangle the actual effect of a plan, including a decisive moment regarding the necessity of alternative measures (Figure 2).

Consequently, an optimization strategy for a post-disaster psychosocial support program should start with a plan, based on an objective derived from the assessed needs of people directly or indirectly affected by disaster, yielding appropriate measures supported by the best available evidence and guidelines. In the “do” phase, the plan is implemented. A well-timed check will show if the optimum is reached or if adaptation is necessary. The strength of the quality improvement strategy is that it links evaluation to need-centered planning (as recommended by Reifels et al, 2013). The optimization strategy is a way to promote watchfulness on both sides of the parabola. By following the plan-do-study-act cycle a safety valve is established. On the potential pathway to professional mental health care people confronted with catastrophe can meet many different actors. Family members, friends, colleagues, community or religious leaders, trained volunteers, nurses, social workers, and family doctors can provide different types of support. They can all function as safety valves within the psychosocial program.

Figure 2: Systematic quality improvement: plan-do-study-act cycle



Repeated measurement

Since an abundance of prevalence research is available from past events, crisis managers, service providers and researchers should be able to make an educated guess regarding what to expect when confronted with a natural or man-made disaster. Prevalence studies are helpful to anyone who wants to know how needs and problems change through time and differ between populations. Although (or because) many mental health problems are likely to decrease gradually and naturally (Bonanno et al, 2010), it is important to understand the influence of intervention. Single measurements say little about self-recovery, resiliency or the added value of psychosocial assistance. This requires repeated measurement.

Examples can be found in the literature, for instance in the context of the Gulf Coast oil spill in Alabama and Mississippi. A comparison of individuals reporting depression symptoms and anxiety disorders in 2011 and 2010 showed that mental

health services are still needed, particularly in households experiencing decreased income since the oil spill (Buttke et al, 2012). Another study showed that mental health complaints in humanitarian volunteers decrease over time but that levels at 18 months are still high enough to warrant additional intervention (Thormar et al, 2012). Raguenaud et al illustrated how epidemiological surveillance could be linked to an outreach program in the post-emergency phase of the storm Xynthia in Charente-Maritime (France). A surveillance program made it possible to describe the occurrence of psychological distress, monitor mental health service use by first-time users, and provide guidance to health authorities (Raguenaud et al, 2012).

Discussion

In the previous sections we explored quality improvement issues concerning post-disaster psychosocial support programs. Our objective was to sketch a conceptual framework for the further study of the quality of such programs, based on models described in the literature.

The variety in available models forced us to make a selection. One can always argue whether other models are more suitable or comprehensive, nevertheless, we chose to adopt a couple of theoretical concepts that, in the last few decades, have become popular among scholars and institutions internationally. The resulting framework is a combination of the Donabedian model, the quality criteria, and the plan-do-study-act-cycle, and leads to several conclusions. First, understanding the quality of a psychosocial program implies knowing the elements that constitute the program's structure, process and outcome, including the scores per quality criterion, plus the associations between the elements. Only then can we work deliberately to improve the quality where desirable or necessary. Second, within the framework, high quality is associated with responsible behavior, avoiding waste and harm, and not overestimating or underestimating resilience (proposed here as a parabolic model). Third, the quality threshold is to be guarded. Program managers and service providers who check/monitor whether their plans and expectations regarding a diversity of individuals or communities come true, bring a safety valve into the program. When we know the needs and problems of affected people, and are confronted with the effect of (non)intervention, we can verify if service delivery is situated in the optimal area of the parabolic model. Finally, application of the framework discussed in this article integrates research and evaluation into disaster response planning.

Based on these conclusions, we recommend that program managers, service providers and researchers use this framework in practice to guide and evaluate the planning and implementation of post-disaster psychosocial support programs. It can be applied to various events and circumstances, and at various moments in time i.e. during the preparation, the response in the acute phase, and the service delivery in the short, mid and long-term recovery phase.

Challenges

In addition to chances, there are challenges. First of all, it is important to examine the program in relation to its context, not as an isolated set of elements. The type of disaster and the nature of the threat are relevant. A natural disaster like flooding or an earthquake, for instance, is likely to demand a different program than a terrorist attack or chemical, biological, radiological or nuclear events (Gouweloos et al, 2014). Moreover, there is reason to assume that well-resourced countries are in a better position to serve communities and individual citizens because of a better equipped system in terms of, for instance, education, access to general practitioners and hospitals, higher levels of public and private health expenditure, lower proportion living in poverty, higher levels of income equality and less resource loss due to public building standards; these are only a few of the country indicators of the World Vulnerability Index (Alliance Development Works, 2011; 2012). The vulnerability level explains at least partly what helps or hinders the design and implementation of psychosocial support programs. The probable correlation between program quality and country features, makes it important to unravel the dynamics between a program and its context which, besides vulnerability, is derived from other cultural, social, demographic and natural factors.

Second, although numerous instruments are available to measure psychological and social capacities, needs and problems of people, convenient and reliable instruments to comprehensively assess the quality of psychosocial support programs are rare. Some examples can be found (see for example the outcome oriented survey tools described by Ommen et al, 2010 or by Holsappel et al, 2013). Still, their availability is to be improved by the development, extensive testing, and international exchange and translation of such tools that, preferably, also cover the structure and process of a program. Crisis and health authorities, service providers and researchers are likely to benefit from this. It will strengthen the evaluation potential and the opportunities to generate feedback that has a positive effect on quality improvement (Ivers et al, 2012; Dückers et al, 2011).

At the same time we must be realistic. Our bandwidth to draw legitimate conclusions on what works and does not work is fairly limited (Bisson et al, 2010; North & Pfefferbaum 2013; Gouweloos et al, 2014). Systematic program evaluations can enrich the international knowledgebase. However, assessing what works and why it works will remain challenging in disaster settings that often are highly uncontrollable, unpredictable and fluid.

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Chapter 7. General conclusions and discussion

7

Overview

In this dissertation we have presented the results of our research on mental health complaints of volunteers and factors related to these complaints.

The primary aims were to:

1) longitudinally describe the incidence of PTSD symptoms, anxiety, depression and subjective health complaints in a cohort of volunteers working in the aftermath of an earthquake;

2) identify predictors of psychopathology, in particular PTSD symptoms in volunteers post-earthquake.

With regards to preparation and training we also looked at anxiety, depression and subjective health complaints as the impact of disaster work is generally expected to be wider than PTSD symptoms (Altindag, Ozen & Sir, 2005; Armenian et al., 1998; Arnberg, Hultman, Michel, & Lundin, 2013; Basoglu et al., 2004; Böðvarsdóttir & Elklit, 2004; Cao et al., 2003; Lai et al., 2004; McFarlane et al., 1997; Montazeri et al., 2005; North et al., 1999; Van der Velden et al., 2006; Vermetten & Olf, 2013; Wahlström, Michélsen, Schulman, Backheden, & Keskinen-Rosenqvist, 2013; Wang et al., 2000; Zaetta, Santonastaso, & Favaro, 2012).

A secondary aim was to use the information gathered from the study to make recommendations for the revision of the IASC guidelines, which may serve to further shape a deliberate planning and evaluation approach for the support of volunteers in a future disaster context.

We carried out a longitudinal cohort study, with 516 volunteers (of the 877 who responded), on three measurement points: 6-, 12- and 18-months post disaster. With this approach we hoped to anticipate some of the main mental health consequences of future disaster work on volunteers and to support volunteer organisations in preparing for better volunteer support. In the following section we will present and discuss the findings with regard to each of our research questions and hypotheses.

Presentation and discussion of main findings

Research Question 1:

What is the incidence of PTSD symptoms and other mental health complaints in volunteers post-disaster? (Chapter 2)

We answered this question by composing findings from a review which explored the literature on the current knowledge on prevalence of PTSD symptoms and other mental health complaints in volunteers post disaster, and combining them with findings from this current study.

The main findings from the review showed that volunteers vary from considerable to high levels of mental health complaints, in particular PTSD, with levels ranging from 24-46% risk of developing the disorder. Compared to professional workers they tend to have higher complaint levels more similar to those of direct survivors. Due to the cross-sectional nature of 7 out of the 9 studies it was hard to assume any cause and effect between predictors and outcomes. The review identified the following risk factors for mental health complaints: *Identification with victims* as a friend, *severity and/or length of exposure* to gruesome events during the disaster work and *lack of post-disaster social support*. Also mentioned were the personality type Anxiety sensitivity, various coping styles, little experience with disaster work and role confusion or ambiguity about what was expected of them.

Prevalence of PTSD has been shown to be around 9 percent in the general population varying between types of trauma (Breslau et al., 1998; Santiago et al., 2013) and populations studied (Breslau et al., 1998). PTSD prevalence (or possibly more accurately referred to as incidence rates) in community members affected by disasters has been documented from 10.3% (Lai et al., 2004) to 34.3% (North et al., 1999) between 6-18 months post disaster. PTSD prevalence across various cultures is generally rather high after earthquakes with China reporting 23% (Cao et al., 2003), Turkey 23% (Altindag et al., 2005) and Iceland reporting 24% of the affected community suffering from PTSD 18 months post-disaster (Böðvarsdóttir & Elklit, 2004).

The findings from our study reflected those in the review where we found levels of PTSD symptoms in the volunteers as high as 28% at 6 months post disaster, and 20.5% at 18 months post disaster. The cut off score of 33 on the Impact of Event Scale – Revised (Weiss & Marmar, 1997) was used to indicate probable PTSD. However, it has to be stated here that also volunteers who fail to meet the cut off score might have been experiencing symptoms that could be disturbing and debilitating (Carlier & Gersons, 1995; Stein et al., 1997).

We assume that the high PTSD incidence rates are partly due to the specific context of earthquakes that may expose the affected to continuous triggers (aftershocks) and are accompanied by sometimes huge loss of resources.

As presented in chapter 3, anxiety and depression symptom levels of our sample were estimated using cut-off scores for the HADS (Zigmond & Snaith, 1983). Levels of anxiety were not particularly high at 18 months where 34% had no anxiety (raw score < 8), 58% presented a mild case of anxiety (raw score 8-10) and only 8% reported moderate levels (raw score 11-15). This is similar to what has been found in the general population (non-disaster sample) of young South East Asians (World Health Organisation, 2007). Approximately 88% of our sample reported no depression, 8% reported mild levels of depression and 4% moderate levels of depression, which is slightly lower than the norm in Asia (World Health Organisation, 2007). These results suggest that anxiety levels in this group of disaster volunteers may not be different from the general population. However, this finding may mean that the types of individuals who volunteer in a disaster setting may have certain characteristics that result in the willingness to volunteers and may also make them better equipped to cope. They may possibly suffer less from depression and anxiety than other survivors (who do not volunteer) at least in the immediate aftermath of the earthquake. Other studies have found higher levels of depression in disaster survivors (a non-volunteer sample) (Meewisse, Olf, Kleber, Kitchiner, & Gersons, 2011).

The mean for subjective health complaints was rather high at 19.78 post-18 months especially when compared to a non-disaster Asian sample using the same instrument

(Eriksen, Hellesnes, Staff, & Ursin, 2004). The health complaints may partly be explained by the extensive physical conditions involved in disaster response, e.g. months of cleaning up debris or difficult living conditions like having to spend the nights sleeping on the floor.

Research Question 2:

Are there particular organizational risk factors for mental health complaints and in particular PTSD symptoms in volunteers? (Chapter 3, 4)

By testing the following hypotheses this question was assessed in several chapters. In chapter 3 we hypothesized that; i) good preparation and training would serve to buffer against psychopathology, ii) certain tasks, in particular removal of dead civilians and psychosocial support, would result in higher psychopathology and so would, iii) lack of support from the organization. In chapter 4 we hypothesized that low sleep quality would be related to higher psychopathology. Demographics were also measured and presented here as potentially influential. We present the identified risk factors divided into pre-, and peri-disaster factors. At the time of the study the operation was still in the recovery phase therefore we did not have a post-disaster setting.

Pre-disaster organizational risk factors for mental health complaints, in particular PTSD symptoms at 18 months

None of the demographic aspects were related to PTSD symptoms not even female gender. This is in contrast with other studies in community samples where female gender has been found to be a consistent predictor of PTSD symptoms (Olff, Langeland, Draijer, & Gersons, 2007). In fact, gender differences are not commonly found in emergency personnel like police and military samples (Engelhard, van den Hout, Weerts, & van Doornen, 2009; Iversen, et al., 2008; Lilly, Pole, Best, Metzler & Marmar, 2009; Souza et al., 2011). It seems that the volunteers resemble other emergency personnel where the female subjects have offered themselves for a task that

is known to be emotionally challenging and thus they might have some form of resilience (Southwick et al, 2014). On the other hand this finding can also be cultural as it has been suggested that Asian cultures might use somatisation as an alternative expression of psychological distress following exposure to traumatic events (Kobayashi, Boarts, & Delahanty, 2007). This may indeed be reflected in our study as we found that females reported significantly higher subjective health complaints than male volunteers.

Even though demographics were not related to PTSD symptoms they were related to other outcomes. Males were more likely to suffer from depression than females. This is not in line with the literature that usually shows a higher prevalence of depression in females (Nolen-Hoeksema, Larson & Grayson, 1999; Piccinelli & Wilkinson, 2000). Dewi et al. (2010) found that gender roles in the Javanese culture are still quite traditional thus there may be cultural factors at play where the males are expected to be the main providers and after such a highly impactful earthquake the unemployment rate was around 30% for a period of time (FAO, 2007) which may lead to males feeling more hopeless than females. The loss of a traditional role has been found to predict distress in displaced populations (Miller, Muzurovic, Worthington, Tipping, & Goldman, 2002) in part because roles give meaning and even structure to a persons life (Lavik, Hauff, Skrondal, & Solberg, 1996) and often promote a sense of competence and self-esteem (Kivela, 1997).

Younger age predicted higher levels of anxiety which is, although not carried out with volunteers specifically, in line with a prior study that found that young fire fighters were more at risk of developing PTSD than older fire fighters (Witteveen, 2007). In our sample we assume that young volunteers may have less training and experience than older volunteers and may feel less prepared and might have less developed coping skills.

Last, since psychosocial support is a risk factor for complaints, pre-disaster attention needs to be given to the training, skill building and preparation of these volunteers.

Policy makers should integrate a protective element into the training such as stress management.

Peri-disaster organizational risk factors for mental health complaints, in particular PTSD symptoms at 18 months

First, in terms of preparation and training volunteers who did not feel safe i.e., felt the quality of briefing and the equipment received was inadequate, were more likely to be anxious. This can also be interpreted the other way round. If volunteers are anxious, they may perceive a greater lack of safety and low quality of equipment. Since the most anxious volunteers were the young ones, these results show a need for better briefing, more support by teamleaders and increased safety measures (or explanations of current ones) specifically for this group.

Second, the tasks of providing psychosocial support and handing out food aid proved to be risk factor for PTSD symptoms and depression. Handling administration resulted in higher depression and subjective health complaints. Provision of psychosocial support to individuals with distress has not been sufficiently studied to establish its benefit or harm post-disaster (North & Pfefferbaum, 2013). Our study is the first to document that volunteers providing psychosocial support may show harmful effects therefrom and thus may need specific attention themselves. This is likely due to the well known effect of secondary traumatization (Hendron, Irving, & Taylor, 2011) or they may lack training to carry out the task (Cyr & Dowrick, 1991) or support. As some of the volunteers are personally affected by the disaster, listening to narratives of others may result in them re-living some of their own experiences. The PMI provides psychosocial support training for volunteers with an extensive 50 hour training programme before they are requested to carry out this task. However, there may be certain effective element missing from this training program which might have to do with e.g. self care. The program only contains 2 x 45 minutes of stress management and self care. The volunteers might be in need for more emphasis on this particular aspect of the training as well as regular stress management workshops. Indonesia is

one of the most disaster prone countries in the world and the PMI volunteers continue to be responded to various crisis situations.

Unexpectedly, we found that being assigned to handing out food aid was related to symptoms of PTSD and depression. The most plausible explanation is that this may be due to disparity between the needs of the impacted community, the time it may take for the PMI to receive the materials for distribution and the limited supplies available in the emergency phase of the disaster. Beneficiaries are thus often desperate and angry when the aid finally reaches them, at the same time the volunteers might have expectations of gratitude. Additionally volunteers handing out food were directly confronted with the suffering of the survivors. A recommendation would be to add an additional 2 hour self-care module to carefully prepare volunteers for this task. Currently it is considered a technically simple task and thus often carried out by those volunteers who were least prepared and trained.

The task of handling administration was related to depression and subjective health complaints which may be due to it being one of the more unpopular tasks, when they are requesting documentation and invoices from every detail carried out. The administrative volunteers are thus often exposed to hostility and lack of appreciation from beneficiaries needing aid and even from other volunteers and staff that may be in time constrain or under external pressure from beneficiaries themselves. This does not always fit with the emergency where things are moving fast, need to be solution-oriented and administration may be perceived to be holding things back. Since administration is still an essential part of the operation, a possible remedy may be to rotate volunteers between less „gratifying“ tasks and more „rewarding“ tasks. In contrast to other studies (Ursano et al., 1990) removal of dead civilians was not related to any psychopathology.

Third, those volunteers who expressed a higher need for general support at 6 months were more likely to develop PTSD symptoms and be more anxious and depressed after 18 months. Furthermore, the more anxious volunteers also expressed a perceived lack

of support from their team leader. Lack of support from team leader was also related to higher subjective health complaints. Low supervisor support has previously been shown to predict PTSD symptoms in firefighters (Tak et al., 2007). The more depressed volunteers also reported perceived lack of support from the PMI as an organisation.

Those who express a great need for support after 6 months can be viewed as a risk group to whom the organisation should provide more than just the normal support structures. Our findings suggest that screening for the need of support at 6 months may be an indicator to refer volunteers to professionals for psychological or psychotherapeutic intervention.

Last, bad quality of sleep was a risk factor for PTSD symptoms and subjective health complaints at 18 months as has been found in other studies (Van Liempt, Vermetten, de Groen, & Westenberg, 2007; Ford, & Kamerow, 1989; Neylan et al., 2002). Especially in the first weeks following the disaster, when the volunteers were working in shifts and taking turns resting many volunteers experienced sleep disturbances. Although sleep disturbances are also a symptom of PTSD this did not seem to be the case in our sample when controlling for sleep items of the IES-R measure. Recent research suggests that disturbed REM or non-REM sleep can contribute to maladaptive stress and trauma responses and could possibly be a risk factor for PTSD symptoms (Babson, 2010; de Boer et al 2013; Germain, 2013; Van Liempt, Westenberg, Arends & Vermetten, 2011; Van Liempt, 2012). Low quality of sleep being related to subjective health complaints can reflect bad quality of sleeping facilities, physically uncomfortable and/or noisy, which resulted in low quality of sleep. The volunteers were mostly sleeping on the floor at the branch facilities or among aid materials, e.g. on top of wheat bags or even out in the open. Low quality of sleep has also been related to subjective health complaints in other studies (Pace-Schott, Milad, Orr, Rauch, Stickgold, & Pitman, 2009). In spite of a third of the volunteers sleeping less than 4 hours per night for the first 6 months, and sleep deprivation is known to affect performance (Killgore, 2010); hours of sleep was not related to any mental health

outcomes. This is an important finding that suggests that rest periods alone are not the main goal but rather the quality of the rest.

In summary, the organizational factors that predicted complaints were perceived low teamleader and organisational support. The subjectively perceived general need for support at 6 months also proved to be a good predictor for complaints that could be used in screening and referral. Other predictors (that can be influenced or mediated by good organisational support) were type of task (with psychosocial support, handing out food and doing administration as high risk tasks) and quality of sleep (which refers to bad sleeping conditions). Perceived feeling of safety, quality of the briefing at the start of mission and quality of equipment were also significant variables.

Research Question 3:

Do directly affected volunteers differ from indirectly or not personally affected volunteers in terms of PTSD symptoms? (Chapter 4)

This question was addressed specifically in chapter 4 where we divided the volunteer group into three layers. Layer one was based on whether they considered themselves to be an: External helper coming from outside the area with no personal ties to the area, layer two on whether they saw themselves as being an external helper but also personally affected due to family or close friends in the affected area and the last, third layer, whether they considered themselves to be directly personally affected by the earthquake. We hypothesized that those who considered themselves to be an external helper coming from outside the area with no personal ties to the area would have the lowest levels of PTSD symptoms.

Contrary to our hypothesis, the analysis showed no difference in PTSD symptoms between the three levels of affectedness. We assume that in spite of their unequal level of affectedness the groups were exposed to the same operational stressors which weighed more than the differences in personal affectedness.

Although the level of affectedness does not show up as a predictor for psychopathology, different exposure variables did and are presented below.

Peri-disaster risk factors for PTSD symptoms included the exposure variable loss of resources. Loss of resources has been found to predict symptoms of distress in other studies (Benight et al., 1999; Dückers, 2013; Hobfoll et al., 2006; Sattler et al., 2006;) and it has 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). Having lost resources or lost access to resources may impact several dimensions of life quality. This may mean for example having lost access to regular sleeping facilities or even to personal working area. This may then affect a volunteers quality of sleep and even working hours since a volunteer may have little motivation to return to his or her home. Additionally this may affect a volunteers stable income and financial capacity.

The peri-disaster risk factors for anxiety included all four exposure variables: loss of resources, being concerned about significant others, exposure to grotesqueness in the immediate aftermath of the disaster and long working hours. Loss of resources may cause the volunteer to feel less safe and more insecure about the future which in a post-earthquake setting can be devastating and may serve to confront the volunteers with their own vulnerability towards the forces of nature and possibly the fear of this happening again. The long working hours, loss of resources and exposure to grotesqueness might all be interlinked. Those who lost the most resources and worked long hours (they might not have a home to return to) may have had a maximized exposure to different grotesque scenes. Long working hours, although necessary in the emergency phase, may in the recovery phase also reflect low support from team leader.

In summary, we can state that exposure, mainly loss of resources and working hours has proven to be a better predictor of complaints than the level of personal affectedness.

Research Question 4:

Do core and non-core volunteers follow the same PTSD symptoms trajectories?

(Chapter 5)

In chapter 5 we split the volunteer group in core vs. non-core based on the time they joined the PMI. Those who had joined at the time of the disaster were considered non-core volunteers. We carried out a latent growth analysis of the data and identified trajectories both in the whole sample and in core and non-core volunteers separately and found two trajectories for both groups: a chronic trajectory (high PTSD symptom levels that will not quickly recover) and a resilient trajectory (moderate levels of PTSD symptoms with slow decrease over time) where the non-core volunteers ($M=25.3$) had higher levels of PTSD symptoms in both trajectories than the core volunteers ($M=21.33$).

The core volunteers were older and were more likely to have a basic education. They were also likely to have received more preparation and training, were more connected to the organisation and thus may be more sure about what is expected of them.

On closer inspection, we found important differences between these groups regarding the development of PTSD symptoms over time. Two PTSD trajectories were recognized as being statistically sound.

Even though, core volunteers had lower levels of PTSD symptoms at 6 months than non-core volunteers in both trajectories, in the chronic trajectory the core volunteers showed a stronger increase in PTSD symptoms between 6 and 18 months than the non-core volunteers. These core volunteers may be suffering from cumulative effect of disaster work.

In summary, we can generally say that core volunteers are at lower risk for psychopathology than non core volunteers but on the other hand those core volunteers that are at risk show even more symptoms than the at-risk non-core volunteers.

Research Question 5:

Are there different risk factors for the PTSD symptom trajectories in core versus non-core volunteers? (Chapter 5)

After identifying the different trajectories through latent growth analysis we identified different predictors for different trajectories and presented this in chapter 5. Some clear relationships appeared which will serve to guide in volunteer management. Again, no gender difference appeared which is rather unusual since gender has been known to predict symptoms of PTSD in various groups (Olf et al., 2007) although not always found in police and military samples (Engelhard, van den Hout, Weerts, & Van Doornen, 2009). Women who volunteer in disasters may have a form of resilience (Southwick et al., 2014) that results in them volunteering for these hard tasks. For the same reason we were interested in social acknowledgement as it has been previously shown to influence symptoms in returning soldiers (Solomon, Mikulincer, & Flum, 1989) and hypothesized that lack of social acknowledgement, would be related to higher levels of PTSD symptoms which was indeed the case where core resilient volunteers had a greater feeling of acknowledgement than core chronic volunteers. Self-efficacy (Hirschel & Schulenberg, 2009) is a variable known to render individuals more resilient when faced with stressors, due to their belief that they have the resources to cope with adversity (Bandura, 1997; Southwick et al., 2014). Thus, we examined the relationship between levels of self-efficacy and PTSD symptoms and found that that core resilient volunteers, had a higher self-efficacy levels than core chronic volunteers. Being a disaster volunteer often requires you to respond to ad hoc requests and attend to several different tasks. According to the PMI this was not the case in Yogyakarta and the volunteers were rigidly assigned to the same tasks. Thus we took at the relationship between tasks assigned and PTSD symptoms to see whether certain tasks are more impactful than others and if some tasks may be more suitable for core than non-core volunteers due to their differences in training and level of preparation.

Conversely the core volunteers in the chronic trajectory, were those who had one of the most confronting and stressful tasks, e.g. provision of psychosocial support. Our study is the first to document that volunteers providing psychosocial support may show harmful effects and thus may need specific attention themselves. This may be due to secondary traumatisation (Collins & Long, 2003; Hendron, Irving, & Taylor, 2011) or to a lack of training to carry out the task (Cyr & Dowrick, 1991). As some of the volunteers are personally affected by the disaster, acting as a supportive listener may result in them being confronted with some of their own painful experiences. The stressful task of body recovery was more likely to be executed by the more resilient core volunteers. This task is particularly strenuous in post-earthquake settings where bodies are often mutilated, bloody and dirty and may have been eaten at by animals. The smell of decay can sometimes be overwhelming. Body recovery has previously shown to be related to PTSD symptoms (Labbate, Cardena, Dimitreva, Roy, & Engel, 1998; Ursano & McCarroll, 1990). It may be that this finding is of a cultural or religious nature. In the Javanese culture, it is considered important to have bodies of victims buried in a dignified way, that they are properly prepared and prayed for in ways of their respective religions. Thus there comes great gratitude with this task. In Islam, it is considered a source of comfort for the living relatives and friends if the bodies of their loved ones are buried within 24 hours after death. Retsikas (2007) identified a certain "brotherhood of death" in East Java where he found that commemoration of the dead, forms a central obligation for all Muslims which falls upon the descendants of the deceased and his/her neighbours. They find themselves fulfilling a religious obligation as good Muslims, a factor that may counterbalance development of psychopathology. They might see the body recovery as giving them benefits now and in the afterlife.

Research Question 6:

Can we derive an operational framework out of the results and literature that may further enable us to shape a deliberate planning and evaluation approach for the support of volunteers in a disaster context? (Chapter 6 and 7)

In chapter 6 we theoretically explored the literature on psychosocial interventions post-disasters and searched the literature for new ways to think about future programming and interventions for beneficiaries and volunteers. We decided to take the broader context (volunteers and those affected by disasters) in order to be able to expand the literature on the topic so the article could be useful in a broader context post-disaster, not solely limited to volunteers but at the same time easily translated to interventions with volunteers.

Based on a combination of renowned quality models, a framework and model was sketched that offers a chance to better understand the context of psychosocial interventions in disasters and optimize the quality of post-disaster psychosocial support. The resulting framework leads to several conclusions. First, understanding the quality of a psychosocial program implies knowing the elements that constitute the program's structure, process and outcome, including the scores per quality criterion, plus the associations between the elements. Second, within the framework, high quality is associated with responsible behavior, avoiding waste and harm, and not overestimating or underestimating resilience. Third, the quality threshold is to be guarded. Program managers and service providers who check/monitor whether their plans and expectations regarding a diversity of individuals or communities come true, bring a safety valve into the program. When we know the needs and problems of affected people, and are confronted with the effect of (non)intervention, we can verify if service delivery is situated in the optimal area of the parabolic model. Finally, application of the framework discussed in this article integrates research and evaluation into disaster response planning. Practical relevance of our findings are presented here below in the form of adjustment to current guidelines.

Currently there is mainly one guideline for the work of mental health in disaster settings. These are the Inter Agency Standing Committee Guideline (IASC) (Inter-Agency Standing Committee, 2007). Due to the limited literature available on mental health of volunteers at the time they were written, they were mostly based on expert consensus. With our findings, that both support certain elements and add new ones, we are getting closer to a scientifically well supported operational framework to support staff and volunteers in and after disasters. The IASC guideline in Action sheet 4.4. pp. 87 emphasize 7 key actions that should take place for prevention and management of problems in mental health and psychosocial well-being among staff (including volunteers). No specific distinction is made in the guidelines between these two different groups or their needs.

The guidelines state that the provision of support to counter balance psychosocial complaints from working in a crisis situation is not only a moral obligation but also the responsibility of humanitarian organisation that unavoidably expose staff and volunteers to extremes (pp. 87).

We will attempt to utilize the findings of this study to complement these recommendations and where appropriate separate the needs of the volunteers from those of staff and recommend that they are given a specific section addressing their special needs separately from paid staff.

In doing so we suggest to take the IASC guidelines a step further by offering scientific back up that supports some of the expert consensus and adding new insight about previously unexplored factors. By this we attempt to translate the information gathered by our studies into practice in the hope it may prove useful for volunteer managers and contribute to reducing psychopathology in disaster volunteers.

In an attempt to combine theory and practice we will address each key action (as they are numbered in the IASC guidelines) here below and discuss them in relation to our findings and make recommendations that aim to keep volunteers mentally healthy:

1. Ensure the availability of concrete plan to protect and promote staff well-being for the specific emergency.

The IASC guidelines recommend that in addition to a general staff policy regarding welfare in emergencies each specific emergency should have a specific plan for proactive support.

Recommendations from our study: The plan for proactive support should include a proactive screening for perceived need of support from the organization and the team leader. This is suggested early in the emergency and before 6 months. Special attention should be given to support for young volunteers and non-core volunteers. Feeling insufficiently supported by the organization or the teamleader may be an indicator of referral for psychological or psychotherapeutic intervention. Those scoring higher on the need for support may be at risk for PTSD, anxiety, depression and subjective complaints at 18 months. Therefore, we recommend that an element of how to recognize the need for support and how to provide support to volunteers should be a standard component within team leader and management training in humanitarian organisations.

2. Prepare staff for their jobs and for the emergency context

The IASC guidelines highlight the importance of briefing on the crisis and the affected population. The recommended briefing includes presenting the communities world views, cultural attitudes and practices as well as systems of social organisation. Training on safety and security is equally emphasized and stress identification and stress management promoted for staff as well as awareness raising about existing organisational policy with regards to mental health. Access to qualified supervision (experienced field management) is recommended.

Recommendations from our study: Here the guidelines are elaborate and in line with our findings. However, it is suggested that a clearer division is made between staff and volunteers here. Staff comes to the scene with “Terms of Reference” for their jobs, where their tasks and resources, including health insurance are clearly defined. The same can not be said for the volunteers. The volunteers need a thorough task description, especially the non-core volunteers who may never have set foot in the organisation and may not even be aware of certain organisational principles, principles of the Red Cross Movement being a good example. There may be a different safety and security situation with regards to volunteers as they may often not be a part of the “base camp” facilities. Depending on the resources, they may not have access to proper sleeping or rest facilities, two way radio systems, or logistics and thus they may sometimes be at an increased risk in terms of security.

A briefing should be held for the volunteers about what the situation involves, line of command (which can change in a disaster setting), triage of tasks, division of tasks, any safety or security concerns, e.g. insurance related matters and possible future changes in relation to those, access to facilities and resources e.g. food and water, importance of self-care and if applicable (mainly to external volunteers) information on cultural attitudes, beliefs and practices. Preferably, volunteers should work in groups where minimum of one is always provided with a way to communicate. This is likely to enhance the feeling of being supported, briefed, and safe especially for the young and the non-core volunteers. In sum, the psychosocial response to the event and support for the volunteers should be tailored to the specific event which is in line with the expert consensus recently published (Reifels et al., 2013).

3. Facilitate a healthy working environment

The IASC guidelines emphasize the importance of rest and recuperation (R & R) where higher frequency of R & R is recommended in case the working environment does not provide opportunities for non-work related activities. That working hours should be clearly defined and if 24-hour, seven-days-a-week work patterns seems essential in the first days or weeks of an emergency then volunteers should be rotated in shifts to

reduce working hours. Appropriate food and hygiene facilities, taking into account their religion and culture. Address excessive, unhealthy living practices such as heavy alcohol use. If possible, provide separate work and living spaces. Facilitate communication between staff and their families and other pre-existing support mechanisms.

Recommendations from our study: This section of the guidelines is also elaborate but does not really reflect the reality of the volunteers environment in some settings. In today's humanitarian operations often very little, if sometimes any, efforts are put into shelter, hygiene or sleeping facilities for volunteers. In line with prior studies (Hobfoll et al., 2006), resource loss has been shown to be a predictor of PTSD symptoms in our study. Priorizing those who have lost resources, it is recommended that efforts are put into re-compensating some of the loss, e.g. for those who have lost access to their homes either as a result of the disaster or because they have come from far away and are not able to return back at night. They should be offered sleeping facilities either in rest centres or tents where they have access to hygiene or washing facilities, depending on the time of year and operational capacity. Our study shows that half of the volunteers suffered damage to their homes in the earthquake and one third needed to relocate as their house was structurally unsafe. Recently in relation to the Ebola operation in West-Africa we have also seen how volunteers are not able to return to their homes at night, simply out of fear of bringing the Ebola virus to their families.

Rotating shifts is a valid recommendation and seeing the effects of quality of sleep and hours of working on subjective health complaints, anxiety and PTSD symptoms in this study, putting up sleeping facilities for volunteers should be a standard factor. This is not only likely to enhance quality of sleep but might also help with reducing the number of working hours and increase the subjective support from the organization.

As part of a healthy working environment facilitating contact between volunteers and existing support networks should be a standard procedure in operations today, where

it currently is not. Such mechanisms put in place are likely to increase the feeling of overall as well as organisational support.

4. Address potential work related stressors

Here the IASC guidelines emphasize clear job descriptions, safety and security protocols, risk assessment and behavior, quality and availability of equipment, staff meetings and supervision, logistical back up and working in teams. Ensure adequate clinical supervision for mental health and psychosocial support staff. Ensure that members of senior management visit field projects regularly.

Recommendations from our study: Our finding that PTSD symptoms and anxiety were related to feeling safe on the job support the importance of good safety and security measures. Disappointment with equipment and bad quality briefing was also related to levels of anxiety. Facilitation of good briefings at the start of mission and good equipment such as gloves, steel toe shoes, face masks and identifying vests as well as tools necessary to carry out specific tasks. The volunteers should be offered a good debriefing at the end of every day where the tasks of the day are reviewed, successes recognized and challenges discussed. This may facilitate feeling of support and acknowledgement.

The terminology “logistical back-up” could be expanded somewhat so that it allows for differences in needs between volunteers, with regard to e.g. food and or rest facilities. This would be most relevant to those volunteers who may have lost access to basic resources or not found access yet, e.g. those volunteers who are coming in from outside the community. More emphasis could also be put on information on and co-operation with bilateral partners to strengthen the feeling of support network.

5. Ensure access to health care and psychosocial support for staff

Here the guidelines discuss training staff in provision of peer support, stress management and psychological first aid. Access to support services when needed are specifically mentioned in relation to local staff. Referral in case of acute psychiatric

symptoms and access to health measures such as vaccinations and medication. Medical evacuation routes should be defined.

Recommendations from our study: Our study also supports these recommendations. The guidelines would benefit from distinguishing between staff and volunteers and even between core and non-core volunteers where specific support should be offered to the non-core volunteers as well as the younger volunteers. The reflected need for support at 6 months and its relations to psychopathology at 18 months show that changes need to take place on a policy level where support is integrated better into the organisational structure and its policy where, e.g. the training of team leaders should put further emphasis on skill building in relation to supporting volunteers, this should include both capacity to identify vulnerabilities as well as responding to them. An increased element of self care should be built into the basic volunteer training but especially so for the volunteers who carry out psychosocial support, food aid and administration. Regular stress management workshops should also be held for the volunteers. It is recommended that teamleaders for psychosocial support volunteers should ideally be mental health professionals. The secondary traumatization and ethical dilemmas some of the volunteers may be experiencing through the narratives of others, especially since they may share some of the same experiences themselves are a vulnerability factor that deserves further attention.

6. Provide support to staff who have experienced or witnessed extreme events (critical incidents, potentially traumatic events).

Here the IASC guidelines emphasize the immediate availability of support and caution about pushing staff to share or listen to others experiences. Healthy coping mechanisms are emphasized as well as self-care. Furthermore, it is made clear that should staff members show a certain level of symptoms they should be relieved of their responsibilities immediately and every staff member who has experienced a critical event should receive a follow up phone call from a mental health professional one to three months post-event.

Recommendations from our study: For this point a clearer distinction is also necessary between staff and volunteers. The current guidelines suggest that „when a staff member shows such severe distress that it limits their basic functioning or they are judged to be at risk to themselves or others, then they must stop working and receive immediate mental health care“. The tolerance for symptoms seems quite high in this action point. As our findings suggests as well as others (Reifels et al., 2013) lower levels of symptoms as well as certain vulnerability factors are predictive enough of development of PTSD and thus mental health care should be provided much sooner for certain subgroups. Those are for example young volunteers, those who have lost access to resources whether they are staff or volunteers and those working on psychosocial support, distribution of food and administration. They should be carefully monitored and rotated between less strenuous tasks. Specific attention should be given to external staff and volunteers (the non-core volunteers) who may not be in close contact with their usual support network. The nature of the event can be a significant factor. Short term events may be highly impactful and specifically the non-core volunteers may not be in any contact with the organisation afterwards. A good registry and stable follow up needs to be in place where all volunteers are followed up at one to three months post-event and encouraged to be in touch sooner should they suffer difficulties prior to the follow up phonecall.

7. Make support available after the mission/employment

The importance of job evaluation is emphasized at the end of mission and that each staff member should receive a physical and mental health check up. Staff support mechanism put in place and each staff member released with stress management materials.

Recommendations from our study: Here again, a clear distinction needs to be made between staff and volunteers. Performance evaluations are not common practice for volunteers and not at all for non-core volunteers. Furthermore, physical and mental health assessments are traditionally not carried out with volunteers, core or non-core. Performance evaluation as well as physical and mental health check up, should be

offered to volunteers. Follow up of mental health should be mandatory to offer to volunteers in disaster operations. It should be a part of the agreement made with the volunteer at the start of mission both for core as well as non-core volunteers. A specific follow up pathway may be needed for non-core volunteers as they may not return to the organization when their mission is over.

However, support should not only be offered post-mission but also during the mission. Support might be needed the most in the first 6 months while the emergency phase is still in operation. Those volunteers who felt lack of support at 6 months were at increased risk for developing psychopathology. The support and acknowledgement such an assessment will provide for the volunteer may buffer against psychopathology.

Additional aspects not found in the IASC guidelines with recommendation from our study:

8. Provide Social Acknowledgement

It seems obvious from our findings that a key action on acknowledgement for work done is missing. Our study showed that those who felt more acknowledged by their community had lower symptoms of PTSD. Although the guidelines do not specifically address social acknowledgement they do touch upon acknowledgement issues, e.g. where in the fourth key action they discuss potential work related stressors and encourage regular field visits from senior management. Simple efforts to publicly acknowledge the work done by the volunteers deserves attention. Not only internally, e.g. through visits from senior management but also by promoting the work of the volunteers to increase community awareness of their tasks and contribute to social acknowledgement. In Yogyakarta the IFRC in co-operation with the PMI had created banners and hung them up in the community where volunteers were acknowledged and thanked for their unselfish efforts, appreciated greatly by the volunteers. Acknowledgement in the form of leadership publicly thanking the volunteers is an

effort that is neither costly nor complicated but could have a powerful impact on the volunteers feeling of recognition and appreciation.

Each volunteer, for example, could receive a document from the highest community authority, confirming the contribution made towards the disaster operation, at a formal ceremony within an appropriate time post-disaster. Preferably this should not be delayed longer than 1 year into the recovery process.

9. Provide follow up and longterm support

Lastly, looking at the high PTSD symptoms in our study at post-18 months it is recommended that organisations put more efforts into long term support. This applies especially for those who are highly symptomatic 6 months into the operation and these volunteers should be offered the appropriate intervention fitting their specific problem. Recent meta-analysis recommends that support should be offered to be provided for a minimum of five and up to ten years (Ajdukovic, 2014). Reifels et al. (2013) agreed that psychosocial support should be multidimensional and their approach recognises the different needs for different groups of survivors across time.

Methodological considerations

Design and sample of cohort

The main strength of the presented study is the longitudinal measurement and the high return rate at follow up. This study is the first epidemiological disaster study in which volunteer subjects were assessed at 3 different points in time. What makes this study unique is the ability to distinguish between core and non-core volunteers which provides valuable information about a group of non-core volunteers that normally gets lost to follow up and often received no post-disaster interventions. Although we had no control group with regard to the question whether the volunteers were more similar to the affected population or to the professional helpers, we were able to form groups with regard to the level of affectedness and by doing so show that variables

related to the volunteering itself and not the mere fact of being part of the affected community seems to contribute to mental health complaints.

No demographic differences nor differences on outcomes were found between participants and dropouts. The main facilitating factor for recruitment was the excellent registration and follow up of the PMI. The questionnaires had all been piloted with a group of volunteers ($N = 30$) who had responded to the Asian Tsunami 2 years earlier and adjusted for any important questions left out or any unclarity in wording.

Our study also has some limitations. Due to delay in receiving approval to start the study we were not able to capture the outcomes earlier than post-6 months. Therefore some of the variables are measured retrospectively and may suffer from recollection bias. The study also used self-report measures for the most part and inaccurate self-reporting can be caused by recall bias, social desirability bias and/or errors in self-observation.

Power and attrition

The response rate of 57% in our study can be considered a large participation rate. To recruit 516 volunteers after a major disaster is a challenge. Especially since many have moved away due to unemployment or temporary housing facilities. This shows well in the current study where 17.5% reported to be unemployed and 33% needed to relocate. The participation rate remained high with 84% returning at 12 months and 78% at 18 months. Based on previous research (Thormar et al., 2010) we expected to find PTSD levels higher than 20% in this population, as was the case. Thus, we assume we detected the effect that was there and the likelihood of making a Type II error is low. Only in Chapter 5 we may have needed a larger sample size in order to identify more trajectories for PTSD.

Generalisability

The cohort in this thesis is drawn from Indonesia, a South East Asian Country, and might not be generalisable for volunteers in other places in the world. Being a country

rated number 108 on the UNDP poverty index (Human Development Reports, 2014)(compared to the Netherlands at number 4 and the Russian Federation at 57) such a disaster may make them more vulnerable to loss of livelihood and studies have shown that loss on different levels are more likely to generate a negative adaptive spiral than events with more limited effects (Schnurr et al., 1998). The volunteer group is also particularly young and, therefore, mainly representative for volunteers under the age of 25 and predominantly male although the women did represent one third of the sample. However, since the Asian continent has the highest occurrence of natural disasters in the world (Statista, 2014) and the highest death toll (Data Dashboard, 2014), the findings are highly relevant to the humanitarian aid community in Asia.

Suggestions for further research

As often is the case in scientific research, questions may remain unanswered by the findings of the current study and during the processing of the data several questions arose deserving further exploration. For example, the finding that provision of psychosocial support to beneficiaries is strongly related to higher symptoms of post traumatic stress. We think future studies should aim to replicate this relevant result, preferably in a longitudinal study where volunteers trained in psychosocial support vs. volunteers with an additional training in self-care are compared after having been assigned this task. This is important given the emphasis being put on training volunteers of humanitarian organisations in psychosocial support in order to improve the care and support offered to beneficiaries. By doing so the aim is not to put volunteers at greater risk for psychopathology themselves.

The need for an operational framework became apparent while translating the results into practical recommendations. This thesis does not attempt to test out this framework but recommends that it is tested out in a review study of prior and ongoing psychosocial support programs.

In addition, which elements in preparation and training phase are most important in terms of buffering against adverse mental health affects are worth exploring further.

This would take the debate further about whether training is beneficial or not and puts greater emphasis on the content of the training. This could be done through a randomized controlled trial where 3-4 different training programs could be used as independent variables and psychopathology as dependent variables. This could then be explored further in terms of whether the same factors are important for core vs. non-core volunteers as well as natural vs. man made disasters including events with intention to cause harm.

Given the extensive research being done on resilience (e.g. Southwick, Bonanno, Masten, Panter-Brick, & Yehuda, 2014) which factors may contribute to resilience of volunteers are worth studying. The relationship between motivation to volunteer and psychopathology remains unexplored and with a brief look into the motivation of the volunteers in the current study it seems that most volunteers offered their time in search of new experiences and not so much from an altruistic viewpoint.

With this thesis we hoped to have contributed with knowledge that may prevent negative mental health consequences of future disaster work on volunteers and that the practical recommendations will be helpful to volunteer organisations in preparing for better volunteer support and to the Inter Agency Standing Committee in revising the current guidelines on mental health and psychosocial support in emergency settings.

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Summary

The findings presented in this thesis derive from a longitudinal study carried out after a massive earthquake, which hit the area of Yogyakarta, on the island of Java, in Indonesia. The primary aim of this dissertation was to longitudinally describe the incidence of PTSD symptoms, anxiety, depression, and subjective health complaints in a cohort of volunteers working in the aftermath of an earthquake. Furthermore, we wanted to identify predictors of psychopathology, in particular PTSD symptoms in the volunteers. A secondary, but not less important aim, was to suggest an operational framework based on the outcomes, e.g. by creating recommendations for the revision of IASC guidelines, one of the most recognized international guideline in the field of emergency mental health. We hoped that the information might serve to shape a deliberate planning and evaluation approach for the support of volunteers in a future disaster context. The specific research questions were:

- 1. What is the incidence of PTSD symptoms and other mental health complaints in volunteers post-disaster? (Chapter 2)**
- 2. Are there particular organizational risk factors for mental health complaints and in particular PTSD symptoms in volunteers? (Chapter 3, 4)**
- 3. Do directly affected volunteers differ from indirectly or not personally affected volunteers in terms of PTSD symptoms? (Chapter 4)**
- 4. Do core and non-core volunteers follow the same PTSD symptoms trajectories? (Chapter 5)**
- 5. Are there different risk factors for the PTSD symptom trajectories in core versus non-core volunteers? (Chapter 5)**
- 6. Can we derive an operational framework out of the results and literature that may enable us to further shape a deliberate planning and evaluation approach for the support of volunteers in a disaster context? (Chapter 6 and 7).**

Conclusions

What is the incidence of PTSD symptoms and other mental health complaints in volunteers post-disaster? (Chapter 2)

The main findings from the review showed that volunteers vary from considerable to high levels of mental health complaints, in particular PTSD, with levels ranging from 24-46% risk of developing the disorder. Compared to professional workers, volunteers tend to have higher complaint levels, more similar to those of direct survivors. The review identified the following risk factors for mental health complaints: Identification with victims as a friend, severity and/or length of exposure to gruesome events during the disaster work, and lack of post-disaster social support. Also mentioned were the personality type Anxiety Sensitivity, various coping styles, little experience with disaster work, and role confusion or ambiguity about what was expected of them.

PTSD prevalence across various cultures is generally rather high after earthquakes with China reporting 23% (Cao et al., 2003), Turkey 23% (Altindag et al., 2005), and Iceland reporting 24% of the affected community suffering from PTSD 18 months post-disaster (Böðvarsdóttir & Elklit, 2004).

The findings from our study reflected those in the review where we found levels of PTSD symptoms in the volunteers as high as 28% at 6 months post disaster, and 20.5% at 18 months post disaster. We assume that the high PTSD incidence rates are partly due to the specific context of earthquakes that may expose the affected population to continuous triggers (aftershocks) and are sometimes accompanied by huge loss of resources.

Levels of anxiety and depression were not particularly high at 18 months, but similar to what has been found in the general population (non-disaster sample) of young South East Asians (World Health Organisation, 2007). However, this finding may mean that the types of individuals who volunteer in a disaster setting may have certain characteristics that result in the willingness to volunteer and may also make them better equipped to cope. The mean for subjective health complaints was rather high at

post-18 months, especially when compared to a non-disaster Asian sample using the same instrument (Eriksen, Hellesnes, Staff, & Ursin, 2004). The health complaints may partly be explained by the extensive physical conditions involved in disaster response, e.g. months of cleaning up debris or difficult living conditions such as having to spend the nights sleeping on the floor.

Are there particular organizational risk factors for mental health complaints and in particular PTSD symptoms in volunteers? (Chapter 3, 4)

No demographics were related to PTSD symptoms, but females reported significantly higher subjective health complaints than male volunteers and males reported higher levels of depression. Younger age predicted higher levels of anxiety.

First, those who did not feel safe i.e. felt that the quality of briefing and the equipment received was inadequate, were more likely to be anxious. Second, the tasks of providing psychosocial support and handing out food aid proved to be risk factors for PTSD symptoms and depression. Handling administration resulted in higher depression and subjective health complaints. Our study is the first to document that volunteers providing psychosocial support may show harmful effects there from and thus may need specific attention themselves. A possible remedy may be to rotate volunteers between less "gratifying" tasks and more "rewarding" tasks. In contrast to other studies (Ursano et al., 1990), removal of dead civilians was not related to any psychopathology. Third, those volunteers who expressed a higher need for general support at 6 months were more likely to develop PTSD symptoms and be more anxious and depressed after 18 months. Furthermore, the more anxious volunteers also expressed a perceived lack of support from their team leader. Lack of support from a team leader was related to higher subjective health complaints. The more depressed volunteers also reported perceived lack of support from the PMI as an organization. Our findings suggest that screening for the need of support at 6 months may be an indicator to refer volunteers to professionals for psychological or psychotherapeutic

intervention. Last, poor quality of sleep was a risk factor for PTSD symptoms and subjective health complaints at 18 months. Although sleep disturbances are also a symptom of PTSD, this did not seem to be the case in our sample when controlling for sleep items of the IES-R measure. This is an important finding that suggests that rest periods alone are not the main goal, but rather, the quality of the rest.

The subjectively perceived general need for support at 6 months could be a good predictor for complaints that could be used in screening and referral. Other predictors (that can be influenced or mediated by good organizational support) were type of task (with psychosocial support, handing out food and doing administration as high risk tasks) and quality of sleep (which refers to poor sleeping conditions).

Do directly affected volunteers differ from indirectly or not personally affected volunteers in terms of PTSD symptoms? (Chapter 4)

We divided the volunteer group up in three levels based on their personal affectedness: Not affected, indirectly affected due to family and friends living in the area, and directly affected. We hypothesized that those who considered themselves to be an external helper coming from outside the area with no personal ties to the area would have the lowest levels of PTSD symptoms.

Contrary to our hypothesis, the analysis showed no difference in PTSD symptoms between the three levels of affectedness. We assume that in spite of their unequal level of affectedness, the groups were exposed to the same operational stressors which weighed more than the differences in personal affectedness.

Although the level of affectedness does not show up as a predictor for psychopathology, different exposure variables did. For PTSD symptoms, loss of resources was the only significant predictor; but, for anxiety, loss of resources, being concerned about significant others, exposure to grotesqueness in the immediate aftermath of the disaster, and long working hours, were all significant. Working hours

were also related to subjective health complaints. In summary, we can state that exposure (mainly loss of resources) and working hours are better predictors of complaints than the level of personal affectedness.

**Do core and non-core volunteers follow the same PTSD symptoms trajectories?
(Chapter 5)**

We split the volunteer group into core vs. non-core based on the time they joined the PMI. We carried out a latent growth analysis of the data and identified two PTSD trajectories in each group: a chronic trajectory (high PTSD symptom levels that do not quickly recover) and a resilient trajectory (moderate levels of PTSD symptoms with slow decrease over time) where at 6 months the non-core volunteers ($M = 25.3$) had higher levels of PTSD symptoms in both trajectories than the core volunteers ($M = 21.3$).

However, in the chronic trajectory, the core volunteers showed a stronger increase in PTSD symptoms between 6 and 18 months than the non-core volunteers. In summary, we can generally say that core volunteers are at lower risk for psychopathology than non core volunteers. On the other hand, those core volunteers that are at risk show even more symptoms than the at-risk non-core volunteers.

Are there different risk factors for the PTSD symptom trajectories in core versus non-core volunteers? (Chapter 5)

We hypothesized that lack of social acknowledgement and low levels of personal self-efficacy would be related to higher levels of PTSD symptoms. A closer look was also taken at tasks assigned to see whether certain tasks may be more suitable for core than non-core volunteers, due to their differences in training and level of preparation.

In the chronic trajectory we found that core volunteers were more likely to have used mental health services prior to the disaster than the other three groups and that core volunteers were more likely to have carried out the task of psychosocial support. This is something that could be addressed in the screening and selection process.

Conversely, the core volunteers in the chronic trajectory were those who had one of the most confronting and stressful tasks, e.g. the provision of psychosocial support. This could be addressed by giving special support and additional training in self care to volunteers assigned to this task.

In the resilient trajectory core volunteers more often carried out body removal tasks than the other three groups. Core volunteers reported higher levels of social acknowledgement and higher levels of self-efficacy than core volunteers in the chronic trajectory.

Implications for practice

Currently there is mainly one guideline for the work of mental health in disaster settings. These are the Inter-Agency Standing Committee Guidelines (IASC) (Inter-Agency Standing Committee, 2007). Due to the limited literature available on the mental health of volunteers at the time they were written, the guidelines were mostly based on expert consensus. By adding our findings, we are getting closer to a scientifically well supported operational framework to support volunteers in, and after disasters. The main observation made is the lack of division between staff and volunteers in the guidelines. In today's disaster operations there is generally a clear distinction between which resources are provided and available to staff and which to volunteers.

We attempted to translate the information gathered by our study into practice in the hope it may prove useful for volunteer managers and contribute to reducing psychopathology in disaster volunteers.

Terms of Reference – Volunteers experience anxiety when it's not clear what the situation they are entering entails, thus clearer guidelines are recommended at the start of a mission. Staff enters the scene with a "Terms of Reference", in which their tasks and resources are clearly defined. Generally, volunteers are not provided with a similar "terms of reference". This applies especially to the non-core volunteers who may never have set foot in the organization and may not even be aware of the appropriate reporting lines, resources available to them, facilities or certain organizational principles, the principles of the Red Cross Movement being a good example.

Operational briefing - Terms of Reference is not able to cover all details, as the disaster situation may change rapidly. It was seen in our study that lack of information on the situation was related to anxiety. An operational briefing should be held for all volunteers, core and non-core. A briefing on what the situation involves, line of command (which can change in a disaster setting), triage and division of tasks or any safety or security concerns such as insurance related matters and possible future changes in relation to those. Furthermore, information concerning access to facilities and resources such as food and water, importance of self-care, and if applicable (mainly to external volunteers), information on cultural attitudes, beliefs, and practices. Such a briefing should be given extensively at the start of mission and then repeatedly as things evolve and change.

Provision of Resources - The relationship between loss of resources, PTSD symptoms, and anxiety makes it clear that compensation of resources is necessary. In today's humanitarian operations often very little, if sometimes any, efforts are put into shelter, hygiene, or sleeping facilities for volunteers. It is recommended that those who have lost access to their homes, either as a result of the disaster or because they have come from far away and are, for this or any other reason, not able to return back

at night, are prioritized in being compensated for their loss. They should be offered sleeping facilities either in rest centers or tents where they have access to hygiene facilities, depending on the time of year and operational capacity.

Because of the impact poor sleep and lengthy work hours has upon the development of anxiety and PTSD symptoms, it should be mandatory that volunteers work in rotating shifts, thereby reducing the number of work hours and alleviating sleep deprivation. For the same reason, putting up rest facilities for volunteers should be a standard factor. This is not only likely to enhance quality of sleep, but might also help with reducing the number of working hours and increase the subjective support from the organization.

Performance evaluations as well as physical and mental health check ups, should be offered to volunteers. Offering follow up services in relation to mental health complaints, should be mandatory for volunteers in disaster operations. It should be a part of the agreement made with the volunteer at the start of mission both for core as well as non-core volunteers. A specific follow up pathway may be needed for non-core volunteers as they may not return to the organization when their mission is over.

Safety and Security - As volunteers are often not a part of the “base camp” facilities, they may not have access to proper sleeping or rest facilities, two way radio systems, or logistics and thus they may sometimes be at an increased risk in terms of security. Our finding that PTSD symptoms and anxiety were related to feeling safe on the job support the importance of good safety and security measures. Preferably, volunteers should work in groups where a minimum of one is always provided with a way to communicate, whether it is for communicating needs of beneficiaries or their own. This may enhance the feeling of being supported and safe.

Provision of good equipment - Since disappointment with equipment was related to levels of anxiety, good equipment such as gloves, steel toe shoes, face masks and identifying vests, as well as tools necessary to carry out specific tasks should be mandatory.

Support - Support should be proactive and include screening for perceived need of support from the organization and the team leader. This is suggested early in the emergency and before 6 months. Support might be needed the most in the first 6 months, while the emergency phase is still in operation. Those volunteers who felt lack of support at 6 months were at increased risk for developing psychopathology. The volunteers should be offered a good debriefing at the end of every day where the tasks of the day are reviewed, successes recognize, and challenges discussed. This may facilitate feeling of safety, support, and acknowledgement.

Special attention should be given to support young volunteers and non-core volunteers, as well as those providing psychosocial support, handling distribution of food, or administration. They should be carefully monitored and rotated between less strenuous tasks. Those exposed to great grotesqueness are also at risk. Feeling insufficiently supported by the organization or the team leader may be an indicator of referral for psychological or psychotherapeutic intervention. Those scoring higher on the need for support in the first months may be at risk for PTSD, anxiety, depression, and subjective complaints at 18 months.

Therefore, we recommend that an element of how to recognize the need for support and how to provide support to volunteers should be a standard component within team leader and management training in humanitarian organizations. The reflected need for support at 6 months and its relations to psychopathology at 18 months show that changes need to take place on a policy level where support is integrated better into the organizational structure and its policy. More emphasis could also be put on facilitating contact with family and friends at home, especially since concern about significant others was a predictor for anxiety in our study. Furthermore, information on and co-operation with bilateral partners should be emphasized to strengthen the feeling of support network.

Last, looking at the high PTSD symptoms in our study at post-18 months it is recommended that organizations put more efforts into long-term support. This applies especially for those who are highly symptomatic 6 months into the operation and

these volunteers should be offered the appropriate intervention fitting their specific problem. A sound and accurate registry of volunteers should be maintained. In addition a consistent and stable follow up procedure should be followed which should include a mandatory one to three month follow up which directly addresses volunteers mental health complaints. Volunteers should also be encouraged to be in touch sooner should they suffer difficulties prior to the follow up phone call.

Recent meta-analysis recommends that support should be offered for a minimum of five and up to ten years (Ajdukovic, 2014). Reifels et al. (2013) agreed that psychosocial support should be multidimensional and their approach recognizes the different needs for different groups of survivors across time.

Social and Organizational Acknowledgement - It seems obvious from our findings that a key action on acknowledgement for the work carried out is missing. This is another element that reflects the differences in needs between staff and volunteers. Staff receives a certain acknowledgement by receiving their salary and their end of mission evaluation. Volunteers need a different form of recognition. Our study showed that those who felt more acknowledged by their community had lower symptoms of PTSD. Although the guidelines do not specifically address social acknowledgement, they do touch upon acknowledgement issues, e.g. where they discuss potential work related stressors and encourage regular field visits from senior management. Simple efforts, to publicly acknowledge the work done by the volunteers, deserve attention. This recognition should not only come in the form of internal recognition e.g. through visits from senior management to the field, but also by promoting the work of the volunteers in the community to increase community awareness of their tasks and contribute to social acknowledgement. In Yogyakarta the IFRC in co-operation with the PMI had created banners and hung them up in the community where volunteers were acknowledged and thanked for their unselfish efforts; this was appreciated greatly by the volunteers. Acknowledgement, in the form of leadership publicly thanking the volunteers, is an effort that is neither costly nor complicated but could have a powerful impact on the volunteers feeling of recognition and appreciation.

A recognition from the highest community authority, e.g. in the form of a document confirming the contribution made towards the disaster operation, at a formal ceremony, within an appropriate time post-disaster, would be advised. Preferably this should not be delayed longer than 1 year into the recovery process.

Self care and stress management - An increased element of self care should be built into the basic volunteer training, but especially so for the volunteers who carry out psychosocial support, food aid, and administration. Regular stress management workshops should also be held for the volunteers. It is recommended that team leaders overseeing volunteers providing psychosocial support should ideally be mental health professionals or at least should this group (including the team leader) have direct supervision by a mental health professional. The secondary traumatization and ethical dilemmas some of the volunteers may be experiencing through the narratives of others, especially since they may share some of the same experiences themselves, are a vulnerability factor that deserves further attention.

Samenvatting (Dutch summary)

De resultaten die in dit proefschrift worden gepresenteerd komen voort uit een longitudinaal onderzoek dat is uitgevoerd na een immense aardbeving die het gebied rond Yogyakarta op het eiland Java in Indonesië trof. De eerste doelstelling van dit proefschrift was om longitudinaal een beschrijving te geven van de incidentie van PTSS symptomen, angst, depressie en subjectieve gezondheidsklachten, in een cohort van vrijwilligers dat in de nasleep van een aardbeving heeft gewerkt. Verder wilden we voorspellers van psychopathologie bij vrijwilligers identificeren, met name van PTSS symptomen. Een tweede, even belangrijke, doelstelling was om een werkbaar raamwerk voor te stellen gebaseerd op de uitkomsten, bijvoorbeeld door aanbevelingen te schrijven voor een revisie van de IASC richtlijnen, een van de meest gerenommeerde internationale richtlijnen op het gebied van crisis geestelijke gezondheidszorg. We hoopten dat deze informatie bij kan dragen aan een weloverwogen aanpak voor de planning en evaluatie van ondersteuning voor vrijwilligers bij toekomstige rampen.

Samenvattend waren de specifieke onderzoeksvragen:

1. Wat is de incidentie van PTSS symptomen en andere mentale gezondheidsklachten bij vrijwilligers na een ramp? (Hoofdstuk 2)
2. Zijn er specifieke organisatorische risicofactoren voor mentale gezondheidsklachten, met name voor PTSS symptomen onder vrijwilligers? (Hoofdstukken 3 en 4)
3. Zijn er verschillen in PTSS symptomen tussen vrijwilligers die direct aangedaan zijn en vrijwilligers die niet persoonlijk direct zijn aangedaan? (Hoofdstuk 4)
4. Vertonen kern en niet-kern vrijwilligers hetzelfde verloop van PTSS symptomen? (Hoofdstuk 5)
5. Zijn er verschillende risicofactoren voor het verloop van PTSS symptomen van kern en niet-kern vrijwilligers? (Hoofdstuk 5)

6. Kunnen we een operationeel raamwerk ontwikkelen, gebaseerd op de resultaten en de literatuur dat ons in staat zal stellen om een weloverwogen aanpak te ontwikkelen voor de planning en evaluatie van ondersteuning aan vrijwilligers bij toekomstige rampen? (Hoofdstuk 6)

Conclusies

Wat is de incidentie van PTSS symptomen en andere mentale gezondheidsklachten bij vrijwilligers na een ramp? (Hoofdstuk 2)

De belangrijkste bevindingen uit het literatuuroverzicht lieten zien dat vrijwilligers variëren van aanzienlijk tot hoge niveaus qua mentale gezondheidsklachten, met name PTSS symptomen, met risico's van 24-46% om de aandoening te ontwikkelen. Vergeleken met professionele hulpverleners schijnen ze meer klachten te hebben met niveaus die meer lijken op die van directe overlevenden. Het literatuuroverzicht identificeerde de volgende risicofactoren voor mentale gezondheidsklachten: Identificatie met slachtoffers als een vriend, hevigheid en/of duur van blootstelling aan gruwelijke gebeurtenissen tijdens het werk na de ramp en gebrek aan post-ramp sociale ondersteuning. Ook werden het angstige persoonlijkheidstype genoemd, diverse coping stijlen, weinig ervaring met ramp-werk en rolverwarring of onduidelijkheid over wat er van hen werd verwacht.

Het vóórkomen van PTSS na een aardbeving is bij verschillende culturen redelijk hoog, waarbij China 23% rapporteert (Cao et al., 2003), Turkije 23% (Altindag et al., 2005) en IJsland rapporteert 24% van de betrokken bevolking die PTSS symptomen hebben 18 maanden na een ramp (Böðvarsdóttir & Elklit, 2004). De bevindingen van onze studie reflecteren die van het literatuuroverzicht aangezien wij PTSS niveaus constateerde van 28% 6 maanden na de ramp en 20.5% 18 maanden na de ramp. Onze aanname is dat de hoge incidentie van PTSS symptomen mede komt door de specifieke context van aardbevingen, waarin de geaffecteerde continue blijft blootgesteld aan triggers (naschokken) en waar de ramp soms gepaard gaat met enorm verlies aan middelen.

De angst en depressie niveaus waren niet bijzonder hoog 18 maanden na de ramp en lijken meer op de niveaus die gevonden worden in een algemene bevolking (niet bij een ramp betrokken populatie) van jonge Zuid Oost Aziaten (World Health Organization, 2008). Echter, dit kan betekenen dat het type persoon dat zich aanmeldt om als vrijwilliger in een ramp setting te werken bepaalde karakteristieken bezit die bij de bereidheid vergroten om zich aan te melden als vrijwilliger en die hen mogelijk beter uitgerust maken om met het werk om te gaan. Het gemiddelde aantal subjectieve gezondheidsklachten was redelijk hoog 18 maanden na de ramp, vooral in vergelijking tot de Aziatische algemene bevolking waarbij gebruik werd gemaakt van hetzelfde meetinstrument (Eriksen, Hellesnes, Staff & Ursin, 2004). De gezondheidsklachten kunnen deels verklaard worden door de langdurige fysiek uitdagende omstandigheden tijdens dit vrijwilligerswerk, zoals maanden lang puin ruimen of leven in erbarmelijke omstandigheden en daardoor nachten lang op de grond slapen.

Zijn er specifieke organisatorische risicofactoren voor mentale gezondheidsklachten, met name PTSS symptomen, onder vrijwilligers? (Hoofdstukken 3 en 4)

Geen van de demografische variabelen waren gerelateerd aan PTSS symptomen, echter vrouwen rapporteerde significant meer subjectieve gezondheidsklachten dan mannelijke vrijwilligers en mannen rapporteerde hogere niveaus van depressie. Jongere leeftijd voorspelde hogere niveaus van angst.

Ten eerste, zij die zich niet veilig voelden, bijvoorbeeld doordat ze de kwaliteit van de briefing en de uitrusting ontoereikend vonden, waren meer geneigd angstig te zijn.

Ten tweede, de taak om psychosociale hulp te bieden en voedsel uit te reiken bleken risicofactoren te zijn voor PTSS symptomen en depressie. Het uitvoeren van administratieve taken resulteerde in hogere mate van depressie en subjectieve gezondheidsklachten. Onze studie is de eerste die gevonden heeft dat vrijwilligers die psychosociale hulp bieden mogelijk schadelijke gevolgen daarvan ondervinden en daardoor zelf mogelijk specifieke aandacht nodig hebben. Een mogelijke oplossing zou

kunnen zijn om te rouwen tussen taken die minder “voldoening gevend” zijn en taken die meer “belonend” zijn. In tegenstelling tot andere studies (Ursano et al., 1990) was het berggen van doden niet verbonden aan psychopathologie. Ten derde, de vrijwilligers die op de meting na 6 maanden aangaven behoefte aan te hebben aan meer algemene ondersteuning, ontwikkelden vaker PTSS symptomen en waren angstiger en depressiever 18 maanden na de ramp. Bovendien gaven de vrijwilligers die angstiger waren ook een waargenomen gebrek aan ondersteuning van hun teamleiders aan. Gebrek aan ondersteuning van de teamleider was gerelateerd aan meer subjectieve gezondheidsklachten. De vrijwilligers die depressiever waren rapporteerden ook een gebrek aan ondersteuning vanuit de PMI als organisatie. Onze bevindingen suggereren dat het screenen voor de behoefte aan ondersteuning na 6 maanden een indicator kan zijn om de vrijwilligers door te verwijzen naar professionele psychologische of psychotherapeutische hulp. Als laatste, slechte slaapkwaliteit was een risicofactor voor PTSS symptomen en subjectieve gezondheidsklachten na 18 maanden. Ook al zijn slaapklachten een symptoom van PTSS bleek dit in onze studie niet het geval te zijn toen we voor items over slaap van de IES-R schaal controleerden. Dit is een belangrijke uitkomst die suggereert dat rust periodes op zichzelf niet het doel zijn maar dat het gaat om de kwaliteit van de rust.

De subjectief ervaren algemene behoefte aan ondersteuning 6 maanden na de ramp zou een goede predictor kunnen zijn voor klachten en zou in screening en doorverwijzing gebruikt kunnen worden. Andere voorspellers (die kunnen worden beïnvloed of gemedieerd door goede organisatorische ondersteuning) waren type taak (met psychosociale ondersteuning geven, voedsel distributie en administratie als hoog risico taken) en kwaliteit van slaap (wat wijst naar slechte slaapomstandigheden).

Zijn er verschillen in PTSS symptomen tussen vrijwilligers die direct aangedaan zijn en vrijwilligers die niet persoonlijk direct zijn aangedaan? (Hoofdstuk 4)

We verdeelden de groep vrijwilligers in drie groepen op basis van hun persoonlijke betrokkenheid (mate waarin men is aangedaan): niet betrokken, indirect betrokken doordat familie en vrienden in de getroffen gebieden woonden en direct betrokken. We namen aan dat vrijwilligers die zichzelf als iemand van buitenaf zagen met geen persoonlijke banden met het getroffen gebied, de minste PTSS symptomen zouden hebben.

In tegenstelling tot onze hypothese liet de analyse geen verschillen in PTSS symptomen zien tussen de drie verschillende niveaus van betrokkenheid. Wij nemen aan dat ondanks hun verschillende niveaus van betrokkenheid, alle drie de groepen aan de zelfde organisatorische stressoren zijn blootgesteld en dat deze zwaarder wogen dan het niveau waarin men persoonlijke is aangedaan.

Hoewel het niveau van betrokkenheid niet naar voren komt als voorspeller van psychopathologie, zijn meerdere variabelen die een mate van blootstelling meten dat wel. Voor PTSS symptomen was verlies van middelen de enige significante voorspeller. Echter voor angst waren verlies van middelen, zich zorgen maken over belangrijke anderen, blootstelling aan weerzinwekkende situaties in de directe nasleep van de ramp en lange werkuren allemaal significant. Werkuren waren ook gerelateerd aan subjectieve gezondheidsklachten. Samengevat kunnen we stellen dat blootstelling (mn. verlies van middelen) en werkuren betere voorspellers zijn voor klachten dan het niveau van persoonlijke betrokkenheid.

Vertonen kern en niet-kern vrijwilligers hetzelfde verloop van PTSS symptomen? (Hoofdstuk 5)

Wij verdeelden de groep vrijwilligers in kern en niet-kern gebaseerd op het tijdstip waarop ze zich hadden gemeld bij de PMI. Wij voerden een latent growth analyse uit op de data en identificeerden twee PTSS soorten verloop in elke groep. Een chronisch traject (hoge PTSS symptoom niveaus die niet snel herstellen) en een veerkrachtig

traject (gemiddelde PTSS symptoom niveaus met een langzame afname over tijd). Zes maanden na de ramp hadden de niet-kern vrijwilligers ($M=25.3$) hogere PTSS symptoom niveaus in beide trajecten dan de kern vrijwilligers ($M=21.33$).

Echter in het chronisch traject toonden de kern vrijwilligers een sterkere groei in PTSS symptomen tussen 6 en 18 maanden dan de niet-kern vrijwilligers. In het algemeen kunnen we stellen dat kern vrijwilligers een lager risico lopen op psychopathologie dan niet-kern vrijwilligers maar ook dat kern vrijwilligers met een risico op het ontwikkelen van psychopathologie, meer symptomen tonen dan de risico-lopende niet-kern vrijwilligers.

Zijn er verschillende risicofactoren voor het verloop van PTSS symptomen van kern en niet-kern vrijwilligers? (Hoofdstuk 5)

Onze hypothese was dat het gebrek aan sociale erkenning en lage niveaus van zelfvertrouwen gerelateerd zouden zijn aan hogere PTSS symptoom niveaus. We keken ook nauwkeuriger naar de taakverdeling om te zien of er bepaalde taken waren die geschikter waren voor kern vrijwilligers dan voor niet-kern vrijwilligers door hun verschil in voorbereiding en training.

In het chronisch traject zagen we dat de kern vrijwilligers meer gebruik hadden gemaakt van het geestelijke gezondheidszorgsysteem voorafgaand aan de ramp te opzichte van de andere drie groepen en was de kans groter dat zij als taak psychosociale hulp bieden hadden gehad tijdens hun werk. Dit is iets wat in de screenings- en selectieprocedure van vrijwilligers aandacht zou kunnen krijgen.

Aan de andere kant hadden kern vrijwilligers in het chronisch traject vaker de meest moeilijke en confronterende taken uitgevoerd, namelijk het geven van psychosociale hulp. Het bieden van speciale ondersteuning en extra training in zelfzorg aan deze vrijwilligers zou een mogelijke oplossing kunnen zijn.

In het veerkrachtige traject waren het vaker de kern vrijwilligers die de taak hadden om stoffelijke overschotten te ruimen boven de andere drie groepen. Kern vrijwilligers

in deze groep rapporteerde een hogere mate van sociale erkenning en zelfvertrouwen dan kern vrijwilligers in het chronische traject.

Implicaties voor de praktijk

Momenteel is er maar één richtlijn voor geestelijke gezondheidszorg in ramp situaties. Dit zijn de Inter Agency Standing Committee Guidelines (IASC) (Inter Agency Standing Committee, 2007). Doordat er weinig literatuur was over de geestelijke gezondheid van vrijwilligers ten tijde van het schrijven van deze richtlijnen, zijn deze voornamelijk gebaseerd op expert consensus. Door het toevoegen van onze bevindingen komen we in de buurt van een wetenschappelijk, goed onderbouwd operationeel raamwerk om vrijwilligers te ondersteunen tijdens en na een ramp. Wat opvalt in de huidige richtlijnen is het ontbreken van een scheiding tussen stafmedewerkers en vrijwilligers. In hedendaagse ramp operaties is er over het algemeen een duidelijk verschil tussen middelen die ter beschikking worden gesteld aan stafmedewerkers en aan vrijwilligers.

We poogden de bevindingen van onze studie te vertalen naar de praktijk in de hoop dat het nuttig zal zijn voor managers van vrijwilligers en zo ook zal bijdragen aan het reduceren van psychopathologie in vrijwilligers die zich inzetten na rampen.

Terms of Reference – Door angst over wat vrijwilligers tegen gaan komen in een ramp omgeving kunnen duidelijke richtlijnen van nut zijn. Stafmedewerkers komen naar het rampgebied met een “Terms of Reference” waarin hun taakomschrijving duidelijk staat verwoord. Dit kan niet gezegd worden voor vrijwilligers. Met name de niet-kern vrijwilligers die mogelijk nog nooit te maken hebben gehad met de organisatie waar ze zich melden en daarom zich ook niet bewust zijn van afgesproken rapportage vormen, middelen die ze tot hun beschikking hebben, faciliteiten of bepaalde organisatorische principes die gelden, zoals het Rode Kruis haar principes heeft.

Operationele briefing – Terms of Reference (taakomschrijving) kan niet alle details omvatten gezien het feit dat in een rampgebied de situatie snel kan veranderen. Wij

zagen in onze studie dat informatie over de situatie gerelateerd was aan angst. Daarom is het van belang dan een operationele briefing gehouden wordt voor de vrijwilligers, kern en niet-kern, waarin wordt gesproken over wat de situatie omvat, de bevelslijn (die veranderlijk is in een ramp gebied), triage van taken, taakverdeling, issues omtrent veiligheid en beveiliging b.v. verzekeringsgerelateerde zaken en hoe deze kunnen wijzigen met de tijd, toegang tot faciliteiten en middelen zoals eten en water, het belang van zelfzorg en indien van toepassing (voor externe vrijwilligers) informatie over culturele opvattingen en praktijken. Een dergelijke briefing zou aan het begin van de missie gegeven moeten worden en meermaals als de situatie weer is veranderd.

Voorziening van middelen – De relatie tussen verlies van middelen, PTSS symptomen en angst laat zien dat compensatie van middelen nodig is. In hedendaagse humanitaire operaties wordt er vaak te weinig, of helemaal geen, aandacht gegeven aan onderdak, hygiëne en slaapfaciliteiten voor vrijwilligers. Door te prioriteren wie middelen kwijt is geraakt, raden wij aan dat er aandacht wordt geschonken aan het compenseren van de verliezen, bijvoorbeeld zij die hun huis kwijt zijn ten gevolge van de ramp, of van ver komen en om welke reden dan ook niet naar huis terug kunnen keren. Zij horen slaapfaciliteiten aangeboden te krijgen waar ze kunnen rusten, in slaapcentra of in tenten met toegang hebben tot wasgelegenheden, afhankelijk van de tijd van het jaar en de operationele capaciteit.

Wisseldiensten worden aangeraden en gezien de relatie die naar voren is gekomen in deze studie tussen kwaliteit van slaap, werkuren en hun effect op subjectieve gezondheidsklachten zoals angst en PTSS symptomen, zou het aanbieden van slaappleatsen aan de vrijwilligers de norm moeten zijn. Dit zal niet alleen leiden tot een verhoogde kwaliteit van de slaap maar kan mogelijk ook leiden tot een reductie van het aantal werkuren en zal de subjectief ervaren ondersteuning vanuit de organisatie verhogen. Evaluatie van prestaties en mentale en fysieke check ups zouden aangeboden moeten worden aan de vrijwilligers. Follow-up van de mentale gezondheid zou verplicht moeten worden aangeboden aan vrijwilligers in

rampgebieden. Het zou een vast onderdeel moeten zijn van het oorspronkelijk contract wat wordt gemaakt aan het begin van de missie, zowel voor kern als niet-kern vrijwilligers. Het is mogelijk dat er een specifieke follow-up procedure voor de niet-kern vrijwilligers opgesteld zou moeten worden, aangezien het mogelijk is dat zij nooit meer terug zullen keren naar de organisatie voor wie zij tijdens de ramp hebben gewerkt.

Veiligheid en beveiliging - Aangezien vrijwilligers geen onderdeel uitmaken van het “base camp” hebben ze vaak geen toegang tot gepaste slaap- of rustfaciliteiten, tweeweg radiosystemen of logistiek, en zijn daardoor soms blootgesteld aan een hoger veiligheidsrisico. Het belang van goede veiligheids -en beveiligingsmaatregelen wordt in onze studie ondersteund door het feit dat het gevoel van veiligheid aan PTSS symptomen en angst gerelateerd is. Bij voorkeur werken vrijwilligers in groepen zodat tenminste een van hen altijd de communicatiemiddelen heeft om zo te kunnen communiceren over behoeften van begunstigen of van henzelf. Dit zou het gevoel van ondersteuning en veiligheid kunnen vergroten.

Beschikbaarheid goede materialen - Aangezien teleurstelling in materialen en uitrusting gerelateerd was aan angst, zouden goede materialen eigenlijk verplicht moeten zijn, zoals handschoenen, schoenen met stalen neuzen, mondkapjes, identificerende (als zijnde van een organisatie) en reflecterende hesjes en ook gereedschap om specifieke taken uit te voeren.

Ondersteuning – Ondersteuning zou pro-actief moeten zijn en zou een screening van behoefte aan steun van de teamleider en organisatie moeten omvatten. De aanbeveling is om dit vroegtijdig te doen en tenminste in het eerste half jaar dat de noodtoestand nog actief is. De vrijwilligers die bij 6 maanden een gebrek aan ondersteuning ervaarden liepen een groter risico om psychopathologie te ontwikkelen. De vrijwilligers zouden dagelijks een debriefing moeten hebben waarin de taken en gebeurtenissen van de dag worden doorgenomen, waar successen worden erkend en waar uitdagingen worden besproken. Dit kan mogelijk het gevoel van veiligheid, ondersteuning en erkenning vergroten.

Bijzondere aandacht zou gegeven moeten worden aan jonge en niet-kern vrijwilligers, en mede zij die taken als psychosociale hulp bieden, voedsel distributie en administratie uitvoeren. Deze vrijwilligers dienen goed gemonitord te worden en zij zouden moeten rouleren tussen deze en minder zware taken. Zij die blootgesteld zijn aan weerzinwekkende situaties, lopen ook een risico. Het gevoel niet te worden gewaardeerd door de teamleider of organisatie kan indicatief zijn voor een doorverwijzing naar psychologische of psychotherapeutische hulp. Zij die hoger scoren op de behoefte aan ondersteuning in de eerste maanden lopen het risico PTSS, angst, depressie en subjectieve klachten te ontwikkelen in de 18de maand.

Daarom adviseren wij dat er het herkennen van steunbehoefte en het bieden van steun, als een standaard element wordt toegevoegd aan de training voor teamleiders en management binnen hulpverleningsorganisaties. De relatie tussen de behoefte aan ondersteuning in maand 6 en psychopathologie in de 18de maand, laat zien dat er een wijziging moet plaatsvinden op beleidsniveau zodat ondersteuning wordt geïntegreerd in de structuur van de organisatie en haar beleid. Een grotere nadruk kan ook gelegd worden op het faciliteren van contact leggen met familie en vrienden aan het thuisfront aangezien zorg voor een ander een voorspeller was voor angst in onze studie. Verder zou informatie over en samenwerking met bilaterale partners meer nadruk moeten krijgen, om zo het gevoel van een steunend netwerk te versterken.

Tenslotte, als we kijken naar de hoge niveaus van PTSS symptomen na 18 maanden in onze studie, is het aanbevolen dat organisatie meer investeren in lange termijn ondersteuning. Dit geldt voornamelijk voor hen die in de 6de maand hoog symptomatisch zijn en zij zouden gepaste hulp, specifiek voor hun klachten, aangeboden moeten krijgen. Een degelijke registratie zou aanwezig moeten zijn waarin alle vrijwilligers tussen 1-3 maanden na hun werkzaamheden een follow-up ontvangen in de vorm van bijvoorbeeld een telefoon gesprek, en ook aangemoedigd worden om eerder contact op te nemen met de organisatie indien zij eerder symptomen voelen opkomen.

Een recente meta-analyse beveelt dat ondersteuning aangeboden zou moeten worden voor een minimum van vijf jaar, met een maximum van tien jaar. (Ajdukovic, 2014). Reifels et al. (2013) is het eens dat psychosociale hulp multidimensionaal zou moeten zijn en dat in hun aanpak de verschillende behoeften van verschillende groepen overlevenden over tijd, erkend worden.

Sociale en Organisatorische erkenning – Het moge duidelijk zijn dat in onze bevindingen een sleutelelement op het gebied van erkenning ontbreekt. Dit is nog een element dat het verschil in behoeftes tussen stafmedewerkers en vrijwilligers belicht. Stafmedewerkers ontvangen een bepaalde vorm van erkenning door het ontvangen van salaris en hun einde-missie evaluatie. Vrijwilligers hebben een andere vorm van erkenning nodig. Onze studie laat zien dat vrijwilligers die het gevoel hebben veel erkenning van hun gemeenschap te ontvangen, minder PTSS symptomen hadden. Hoewel de richtlijnen niet specifiek sociale erkenning benoemen, worden ze wel globaal genoemd b.v. daar waar ze potentiële werk-gerelateerde stressoren bespreken en aanmoedigen tot reguliere veldbezoeken door het senior management. Eenvoudige maatregelen om publiekelijk de inzet van de vrijwilligers te erkennen verdienen aandacht. Niet alleen intern bijvoorbeeld door bezoek van het hoger management, maar ook door het werk van de vrijwilligers te promoten om zo het bewustzijn te vergroten in de samenleving en daarmee bij te dragen aan meer sociale erkenning. In Yogyakarta, heeft de IFRC samen met de PMI banners door de stad opgehangen waarop de vrijwilligers bedankt worden voor hun onzelfzuchtig werk. Dit werd door de vrijwilligers enorm gewaardeerd. Wanneer leiders publiekelijk hun dank betuigen aan de vrijwilligers is dit een blijk van erkenning waar weinig kosten aan verbonden zijn, die organisatorisch niet ingewikkeld hoeft te zijn en wat een sterk effect kan hebben het gevoel van erkenning en waardering bij de vrijwilligers.

Ook wordt er aanbevolen de vrijwilliger erkenning van een hoge autoriteit uit de gemeenschap te laten krijgen. Bijvoorbeeld in de vorm van een document waarin de geleverde bijdrage aan een ramp situatie wordt bevestigd, gepresenteerd op een

formele ceremonie, binnen een adequate periode. Het liefst zou dit binnen een jaar na de herstel periode gedaan moeten worden.

Zelfzorg en stress management – Het element met betrekking tot zelfzorg in de basis vrijwilligers training zou moeten worden uitgebreid, met name voor hen die de taken voedsel distributie, het verlenen van psychosociale hulp bieden, en administratie uitvoeren. Reguliere stress management workshops zouden gehouden moeten worden voor de vrijwilligers. Het is aanbevolen dat de teamleiders van vrijwilligers die psychosociale hulp bieden, zelf professionals zijn op het gebied van geestelijke gezondheid, of tenminste onder directe leiding van zo een professional staan. De secundaire traumatisering en ethische dilemma's die vrijwilligers beleven door het aanhoren van verhalen van anderen, vooral als ze dezelfde ervaring hebben gedeeld, zijn kwetsbaarheidsfactoren die meer aandacht verdienen.

Appendix 1

Diagnosis of Posttraumatic Stress Disorder (DSM-V, American Psychiatric Association 2013).

Criterion A	Exposure to actual or threatened death, serious injury, or sexual violence in one (or more) of the following ways: The person has
1	directly experienced the event,
2	witnessed the event as it occurred to others,
3	or learned of it happening to a close family member or friend which was either violent or accidental
4	Experienced repeated or extreme exposure to horrifying details of the event (e.g. first responders collecting human remains; police officers repeatedly exposed to details of child abuse).*
Criterion B	Presence of one (or more) of the following intrusion symptoms associated with the traumatic event(s):
1	Recurrent, involuntary and intrusive distressing memories of the traumatic event(s).
2	Recurrent distressing dreams in which the content and/or affect of the dream are related to the traumatic event(s).
3	Dissociative reactions (e.g., flashbacks) in which the individual feels or acts as if the traumatic event(s) were recurring
4	Intense or prolonged psychological distress at internal or external cues that symbolize or resemble an aspect of the traumatic event(s).
5	Marked physiological reactions to internal or external cues that symbolize or resemble an aspect of the traumatic event(s).
Criterion C	Persistent avoidance of stimuli associated with the traumatic event(s), as evidenced by at least one of the following:
1	Avoidance of or efforts to avoid distressing memories, thoughts, or

	feelings about or associated with the traumatic event(s).
2	Avoidance of or efforts to avoid external reminders (people, places, conversations, activities, objects, situations) that arouse distressing memories, thoughts or feelings about or closely associated with the traumatic event(s).
Criterion D	Negative alterations in cognitions and mood associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred, as evidenced by two (or more) of the following:
1	Inability to remember an important aspect of the traumatic events(s) (typically due to dissociative amnesia and not to other factors such as head injury, alcohol or drugs).
2	Persistent and exaggerated negative beliefs or expectations about oneself, others or the world.
3	Persistent, distorted cognitions about the cause or consequences of the traumatic event(s) that lead the individual to blame himself/herself or others.
4	Persistent negative emotional state (e.g.fear, horror, anger, guilt, shame)
5	Markedly diminished interest or participation in significant activities.
6	Feelings of detachment or estrangement from others
7	Persistent inability to experience positive emotions (e.g. happiness, satisfaction or loving feelings).
Criterion E	Marked alterations in arousal and reactivity associated with the traumatic event(s), as evidenced by two (or more) of the following:
1	Irritable behavior and angry outbursts typically expressed as verbal or physical aggression toward people or objects.
2	Reckless or self-destructive behavior
3	Hypervigilance
4	Exaggerated startle response

Criterion F	Duration of the disturbance is more than 1 month
Criterion G	The disturbance causes clinically significant distress or impairment in social, occupational or other important areas of functioning.
Criterion H	The disturbance is not attributable to the physiological effects of a substance or another medical condition.

*Note: Criterion A4 does not apply to exposure through electronic media, television, movies or pictures, unless this exposure is work related.

Acknowledgements

The journey that led me to this research started in Banda Aceh Indonesia in January of 2005 as I have mentioned at the start of this dissertation. However, my interest in psychotrauma started years before when I was working as a nurse in the emergency room at the University hospital in Reykjavík, Iceland. Witnessing people's most difficult life events led me to further study the field of trauma by entering the psychology program at the University of Iceland. In the middle of my studies life took me to the Netherlands where my former husband had taken a work position. With long distance and online studying I gathered enough points in psychology to enter the Health psychology Masters program at Leiden University. After graduating with distinction I got offered a paid PhD position researching goal setting in cardiac rehabilitation. After some thought I decided to take the position but soon it became evident that my family would be moving back to Iceland. I had a dilemma. Should I put my foot down and say we are not going anywhere or should I attempt to develop a project of my own. This takes us back to Indonesia. A couple of months earlier I had been sitting at the steps of the IFRC delegation in Banda Aceh, after one of the greatest disasters ever recorded in history, contemplating the effects this work would have on these young volunteers. This was in my heart. I quickly decided to explore any interest for me taking this on as a PhD study and possible funding possibilities. I contacted the IFRC and spoke to Dr. Adelheid Marschang who told me that she had been waiting for a phonecall like this and that the need to study volunteers was great and she would provide me with any support possible, except funding. Although they later contributed with funds, the tradition is that Universities support the Red Cross and not the other way around. With the interest of the IFRC as a framework behind my idea I pursued my options further with Prof. Dr. Berthold Gersons, Prof. Dr. Barbara Juen and Prof. Dr. Miranda Olff who were kind enough to take interest in this underdeveloped idea which had no funding behind it – yet. Without knowing much about me they believed in my abilities to set this study up and to generate enough funding for it, for which, I will always be grateful.

I contacted my former boss at the Icelandic Red Cross for whom I had worked years earlier, Kristján Sturluson, and asked him to facilitate contact with the Indonesian Red Cross. After a year of administrative negotiations, together with my network within the

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recognize that I am not the typical PhD student, if such a student even exists, and I am sure I tested your patience more than once. But you never gave up on me and you continued to believe in me. You stood by my impulsiveness and my energetic ideas, traveled around the world with me more than once and enjoyed the set up of field work. It was inspiring to see your enthusiasm about how the volunteers would show up for the study, in groups, without any reimbursement. You did not hesitate with having to sit on floors or distribute questionnaires, everything was the same for you. I will never forget how elegantly you handled what came up with my research proposal. When someone went ahead and used it for their own purpose. You managed to get the best possible outcome without kicking up any dust. You taught me how to be strategic. It was an enjoyable experience for me to have you and Ila on board and representing our research team. Thank you for all your support throughout the years.

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De reis die mij tot dit onderzoek heeft geleid begon in Bandah Aceh in Januari 2005, zoals ik al in mijn voorwoord heb genoemd. Echter, mijn interesse in psychotrauma begon toen ik als verpleegkundige werkte op de Spoedeisende Hulp in het academisch Ziekenhuis van Reykjavik twintig jaar geleden.

Getuige te zijn van mensen hun meest moeilijke levenservaringen, leidde mij ertoe om te beginnen aan de studie Psychologie aan de Universiteit van Reykjavik. Midden in mijn studie bracht mijn persoonlijke situatie mij naar Nederland, waar mijn voormalige echtgenoot een positie aannam. Door op afstand en online door te studeren had ik genoeg punten om deel te nemen aan het Health Psychology Masters programma aan de Universiteit van Leiden. Na mijn bul met onderscheiding te hebben gehaald, werd mij een AIO positie aangeboden op het gebied van doelstelling bij hartrevalidatie. Na een korte overweging besloot ik de positie aan te nemen, echter al gauw werd duidelijk dat mijn familie weer terug zou verhuizen naar IJsland. Ik had een dilemma. Moest ik nu mijn poot stijf houden en zeggen: we gaan nergens heen of ga ik proberen mijn eigen project op te zetten? Met die vraag zijn we terug in Indonesië. Een paar maanden daarvoor had ik, op de trappen van het IFRC gebouw in Banda Aceh gezeten, nadat één van de grootste rampen in de geschiedenis van de mensheid had plaatsgevonden, nagedacht over hoe de vrijwilligers door actieve hulpverlening beïnvloed zouden worden. Dit is waar mijn hart naar uit ging.

Zonder al te veel en al te lang verder te denken besloot ik de interesse in een dergelijk onderwerp te onderzoeken en de mogelijkheden tot bekostiging van een dergelijk onderzoek in kaart te brengen. Ik nam contact op met het IFRC waar ik Dr. Adelheid Marschang sprak en zij vertelde mij dat ze al een tijdje op een dergelijk telefoontje had zitten wachten. Ze zei dat de noodzaak om vrijwilligers te onderzoeken groot was en hoewel zij mij de nodige ondersteuning zou bieden, was er geen financiële ondersteuning mogelijk op dat moment. Later hebben zij wel financieel bijgedragen, echter de traditie is dat de Universiteit het Rode Kruis ondersteunt, en niet andersom.

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Voor het faciliteren van de interviews tijdens de pilotfase van het onderzoek, hadden we het geluk om samen te kunnen werken met een tweetalige psychologe van het PULIH Centrum voor Trauma in Jakarta, Mevr Nelden Djakababa. Zij werd onze vertaalster tijdens de interviews. Hierdoor raakte Nelden steeds meer geïnteresseerd in het onderwerp; Vrijwilligerswerk na een ramp. Met haar achtergrond als cultureel psycholoog ontwikkelde zij een fascinatie voor wat de culturele factoren zouden kunnen zijn in coping gedrag. Zo werd Mevr Djakababa deel van ons team en werkte met ons zij aan zij gedurende de hele onderzoeksperiode tijdens alle metingspunten, namelijk 6, 12 en 18 maanden. Zij trachtte antwoorden te zoeken op culturele coping mechanismen. De resultaten hiervan zullen volgen in een dissertatie van haar eigen hand. Nelden, dankje voor alle fantastische momenten die we hebben gedeeld gedurende deze reis en al je ondersteuning, de lange nachten en de tips op het gebied van cultuur verschillen die je gaf om ons uit de problemen te houden! Je bent een goede vriendin geworden.

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Dit is een moeilijke reis geweest, en deze dissertatie heb ik op verschillende computers geschreven in vele verschillende landen. Het meeste aan boord van een vliegtuig. Er zijn tijden geweest dat ik het op wilde geven, maar ik ben blij dat ik daar nooit aan toe heb gegeven. Terugblikkend zie ik meer momenten van vreugde, dan van tranen.

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Curriculum Vitae

Sigríður Björk Thormar completed her Bachelor of Science degree in nursing to become a registered nurse in 1994. She worked in the area of emergency services for 7 years both as a nurse in the emergency unit at the Landspítali University Hospital in her birth town of Reykjavík, Iceland and as a teacher in the school for paramedics in Reykjavík. She took on the role of a national co-ordinator for first aid and psychosocial services at the Icelandic Red Cross where she was responsible for the continuous training of the Icelandic public, various professional groups working in emergency services, teachers and pool and sports hall staff. In 1999 she started her psychology studies for BA in psychology at the University of Iceland and finished her Masters degree in Health Psychology at Leiden University in 2003 where she graduated with honours. Sigríður has been a delegate for the International Federation of the Red Cross and Red Crescent Societies (IFRC) for 15 years and has trained in the area of psychosocial support in over 25 countries around the world. Sigríður was the main author on the IFRC training material for training of trainers for Community based Psychosocial Support and is one of the main consultants for the IFRC Reference Center for Psychosocial support. She has conducted assessments for the IFRC and developed program plans for national societies after some of the major critical incidents or disasters of recent time e.g. the 2004 Tsunami in Indonesia, the 2010 Haiti earthquake and the 2012 Uganda Ebola outbreak. Currently she is finishing her training as an EMDR therapist and has her own practice in Reykjavík as well as working on humanitarian assignments as a member of the IFRC Emergency Response Unit roster for health and psychosocial support. Sigríður owns and runs a concept store for children, “We start out small” in Reykjavík, Iceland through which she has further expanded her humanitarian interests and focus and where she among other things imports and sells products from a rehabilitation center in Yogyakarta in Indonesia. She works with producers who stand for those same values she holds to heart and thereby leads by example to draw attention to the importance of corporate social responsibility of businesses, big and small alike. Sigríður and Björn Einarsson have two sons: Sigurður Hrafnar (1993) and Tomas Atli (2000).

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- The Icelandic International Development Agency – Þróunarsamvinnustofnun Íslands

Portfolio

Name PhD student	Sigrídur Björk Thormar
Name PhD supervisor	Prof. Dr. B. P. R. Gersons, Prof. Dr. M. Olff

	Year	Workload (ECTS)
<u>General courses</u>		
Advanced topics in Biostatistics	2006	2.1
Better use of PubMed and other medical databases	2006	0.1
Reference Manager	2010	0.1
EMDR level I	2010	0.9
EMDR level II	2011	0.9
EMDR for complex trauma	2012	0.9
Emotional focused couples therapy	2014 – 2015	1.5
<u>Seminars, workshops and master classes</u>		
Weekly department seminars	2006 – 2014	5.0
Trauma and neurobiology workgroup seminars	2006 – 2014	1.0
GGZ & Nieuwe Media II	2007	0.2
European Workshop on traumatic Stress	2007	0.7
International anxiety disorders symposium	2009	0.3
Symposium High Tech – Low care?	2011	0.2
Mastersclass by Prof. A. Shalev	2008	0.2
<u>(Inter)national conferences</u>		
Oral presentation at the European Conference on Traumatic stress	2011 – 2013	1.0
3 oral presentations at the Icelandic Society for psychology	2010 – 2014	1.5
Oral presentation at the International, Preparedness & response to emergencies and disasters	2014	0.5
3 oral presentation at the IFRC European working group for psychosocial support	2006 – 2014	1.5

4 oral presentations at the IFRC expert meeting on traumatic stress	2006 – 2014	2.0
4 oral presentatinos for OPSIC - EU working group on psychosocial support for emergency services in Europe	2011 – 2014	2.0
Oral presentation IFRC European Conference on Psychosocial support	2006	0.5

Academic teaching

Course of psychosocial care after trauma. Department of psychology, Reykjavík University	2011	2.0
7 lectures for various groups on psychological trauma and support	2007 – 2014	3.5

Field training

International Red Cross/Crescent Security training course	2009	1.5
Norwegian Red Cross/IFRC trained as a ERU (Emergency response unit) delegate and team leader	2011	5.0

Field work and trainings

IFRC FACT team deployed to Bosnia post floodings of 2014. Recovery, assessment and plan of action for psychosocial interventions in Bosnia.	2014	
Assessment of PSS interventions after Utoya in Norway, Madrid bombings, Aircrash at Barajas airport, Tsunami in Japan, train accident Wetteren in Belgium, shootings at Alphen aan de Rijn in Netherlands and several others.	2014	
IFRC team leader for EBOLA assessment in Uganda. Focus on psychosocial consequences and interventions related to EBOLA. Ways to use PSS as a tool to manage the outbreak.	2013	

Set up a Psychosocial support program for the Red Cross in Cyprus. Training for leadership.	2014
Training of Trainers for IFRC and Reference Center for Psychosocial support in Malawi.	2013
Training and mentoring of ERU delegates for Community health Module and Psychosocial support. Field training Zimbabwe.	2012
Training of trainers for IFRC and Reference Center for Psychosocial support in Copenhagen.	2012
Emergency response unit (ERU) training for Icelandic Red Cross/IFRC/Finnish/Swedish Red Cross.	2011
Emergency response unit delegate – deputy team leader.	2011
Recovery Assessment Mission – RAT for International Federation of Red Cross/Red Crescent (IFRC) in Haiti. Evaluation of the mental health situation in Haiti (needs vs.resources) nationwide. suggestions of a 3 year strategy for IFRC in planning recovery in Haiti.	2010
Trained community leaders for Uganda Red Cross who will be working with returned child soldiers trying to rehabilitate them back into the community.	2008
Organizing and working on the Psychosocial support for Icelandic earthquake survivors for two weeks in the south of Iceland.	2008
Trained of Lebanese psychologists for the IFRC Delegation in Lebanon after	

the July war. 2007

Trained disaster preparedness staff
of the Seychelles and Mauritius Red
Cross Societies. Integration of support
into their disaster response plan. 2007

