

# Training of Basic Rehabilitation Medicine on Volunteers in Disaster Management

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**Abstract:** Geographically of Indonesia is located in potential disaster area. Disaster divided into natural and man-made disaster. Natural or man-made disasters are serious problems that should be managed. One of the problems is health problem that should get disaster management, including rehabilitation medicine. Rehabilitation medicine is important to normalize all aspects in post-disaster area. Many responders or volunteers that affiliated or unaffiliated were involved to rehabilitation management in disaster. All responders consist of doctors, paramedics, organization, non-government organization, military, international organization. Responders who have rehabilitation skill give better outcome to the victims.

## 1 INTRODUCTION

Geographically Indonesia archipelago are located within the confluence of three tectonic plates. This three tectonic plates lies within two Continents, Asia and Australia, and the Pacific Ocean. There were many volcanos in Indonesian archipelago along the northeastern islands adjacent to and including New Guinea and the Alpide belt along the south and west from Sumatra, Java, Bali, Flores, and Timor called *The Ring of Fire*. These conditions made Indonesia very prone to disasters such as volcanic eruptions, earthquakes, tsunamis, landslides, and others (BNPB, 2017).

Disaster is defined by World Health Organization (WHO) as a serious disruption of functioning of a community or a society causing widespread human, material, economic or environment losses which exceeds the ability of the affected community or society to cope using its own resources (WHO, 1980).

## 2 DISCUSSION

### 2.1 Respond to Disaster

During and after a disaster event, there are many different types of people who respond and at

different times, those people mention as responders or volunteers. Responders are those people who respond the disasters and want to help the victims of the disaster based on humanity with no limits. There are two types volunteers: affiliated and unaffiliated volunteers. Affiliated volunteers generally participate in formal volunteering actions while unaffiliated volunteers are those who volunteer in an informal way and not attached to a recognized agency (Helen, 2016).

### 2.2 The Role of Volunteers in Disaster

Affiliated volunteers contribute with their unpaid time to the activities of the organizations. These organizations give the necessary training, skills, and information that should they have prior to the occurrence of a disaster. Meanwhile, unaffiliated volunteers, also known as spontaneous volunteers, are motivated by a sudden desire to help others in times of disaster or emergency. They assist directly with the situation and genuinely want to help, but without being part of a formal organization. Typically, they are from the devastated area caused by the disaster (Helen, 2016).

One of the volunteer type is the Emergency Medical Team (EMT). EMT are group of health professionals organization that serve victims affected by a disaster. This group comes from governments, non government organization (ngo),

militaries, national organization, international organization such as the international red cross, red crescent movement, and charities. The work of EMT is regulated with classification and minimum standards set by World Health Organization (WHO) and its partners (WHO, 2017).

### 2.3 Classification of EMT

About EMT, WHO has classified EMT into three types and one specialized team. Type 1, provides outpatient initial emergency care of injuries and other significant health care needs. There are two subtypes of type 1; first is type 1 mobile there are able to treat minimum fifty outpatients per day, day time service only, and mobile team and equipment and no temporary clinical facility and fixed (100 patients/day). Type 1 fixed is same as type 1 mobile, but work put of a fixed structure and provide up to 12 hours per days of care, 7 days of weeks. Type 2 provides emergency care including surgery, 24 hours a day, and deploys field hospitals with at least 20 beds and can replace and support small district hospital. Type 3 provides inpatient referral care and complex surgery with large 40-100 beds facilities and support and replace tertiary hospitals. Specialized teams are the teams with specialty in specific medical area. The teams consist of 2 or 3 senior specialists or a specialist facility eg. Ebola or Rehabilitation (WHO, 2019; WHO, 2015).

There are various model of EMT around the world. In USA, National Disaster Medical System (NDMS) is coordinated system within the US Department of Health and Human Services that serves the Federal response by providing disaster medical care to the US and more recently with responses to the Bam Earthquake in Iran and the Earthquake in Haiti, to the world. NDMS are Disaster Medical Assistance Teams (DMAT), Disaster Mortuary Operational Response Teams (DMROT), International Medical Surgical Response Team (IMSURT), and National Veterinary Response Team (NVRT). Each DMAT consist of 35 members team with various professions (physicians, nurses, emergency medical technicians, pharmacists, and support personnel). Currently there are eighty DMAT in USA (Fuse and Yokota, 2010; Mace et al, 2007, Aziman, 2015).

DMAT in Japan (J-DMATs) were different from US-DMATS, because the nature of disasters that occur in these two countries are different. J-DMATs consists of 1 or 2 medical doctors, 2 or 3 nurses, and 1 or 2 logisticians. J-DMATs do not participate in international missions, but Japan supports

international mission by Japan Disaster Relief (JDR) that operates under Japan International Cooperation Agency (JICA) (Fuse and Yokota, 2010; Mace et al, 2007, Aziman, 2015).

In Canada, it is named as Disaster Assistance Response Team (DART), a 200-Canadian Armed Force (CAF) member military organization that can be deployed internationally in response to situations ranging from natural disasters to complex humanitarian emergencies. DART can provide assistance for up to 40 days. They serve three critical needs in emergencies: water purification, primary medical care, and engineering assistance. DART is composed of 6 main elements: DART Headquarters (about 45 members), DART Company Headquarters (about 10 members), Engineer Troop (about 40 members), Medical Platoon (about 45 members), Logistics Platoon (about 20 members), and Defence and Security Platoon (about 45 members) (Fuse and Yokota, 2010; Mace et al, 2007, Aziman, 2015).

Different with other country, Turkey reorganized the disaster and emergency management organization, in 2004 National Medical Rescue Teams (NMRT) was established under ministry of health. A NMRT consist of 5 healthcare personnel with at least one doctors. Based on different local risks, NMRTs may include mountain rescue teams, water rescue teams, CBRN teams, air rescue and/or evacuation temas (Fuse and Yokota, 2010; Mace et al, 2007, Aziman, 2015).

### 2.4 The Role of EMT in Indonesia

Based on the Republic of Indonesia Constitution, number 24 in the year of 2007 concerning Disaster Mitigation, a government regulation was issued that is Number 8 in the year of 2008 Presidential Regulation concerning the National Disaster Management Agency (BNPB). BNPB is an organization that consists of disaster management directors and disaster management implementing elements. This organization has the function of coordinating the implementation of disaster management activities, in a planned, integrated and comprehensive manner. BNPB organization consists of disaster management education and training center, deputy for rescue and preparedness, emergency maintenance, rehabilitation and reconstruction, logistics and equipments (BNPB, 2017; BNPB, 2017) (Ginanjjar E dan Tarigan TE, 2006)

## 2.5 Health Problem in Disaster

Effects of disasters depend on the type of disaster, in generally disaster can cause injury and loss of human life (Carter, 2008a). There are two types of disaster, natural and man made (Carter, 2008b). Other importance of health impacts caused by disaster are spinal cord injury, traumatic brain injury, limb amputation, fractures, crush injury, peripheral nerve injuries, and psychological impairment (Khan et al, 2012).

Another natural disaster such as forest fire that happened in Kalimantan and Sumatera lead to air pollution. Air Pollution causes medical problems such as respiratory tract infection, asthma, bronchitis, chronic obstructive pulmonary disease, and in the long time may lead lung cancer (PDPI, 2019). Disaster whether from natural or man made may cause trauma. Trauma may lead to disability for over 45 million people each year worldwide (WHO, 2011). A systematic review analysis show in USA the costs of lifetime for all injured patients were estimated to be \$158 billion in 2001, while in Australia, lifetime costs were \$4 billion to trauma survivors. Those health problems have potential to increase the incidence of disabilities among disaster survivor.

## 2.6 Rehabilitation Medicine Program In Disaster

There were many changes related to health problems after a natural disaster. Some of those problems were, an increase of respiratory infection and airborne diseases. Epidemic and outbreaks of vector borne and zoonoses diseases. Beside of that, water condition for drinking and sanitary in the polluted area was contaminated.

Adequate Rehabilitation Medicine program should be applied to prevent the disability among survivor. Comprehensive Rehabilitation Program there should be Rehabilitation is the adequate improvement and recovery of all aspects about public or community services in post-disaster areas, with main target for the normalization of all aspects in government and community life (The Right No. 24,2007).

The volunteers have an essential role in Rehabilitation Medicine program, according lack of the number of the official medical staff. Responders or affiliated volunteers can be a significant resource during and after disaster, because they possess proper information about disaster management. Responders or volunteers had an understanding of

the existing tools and disaster management procedures, received adequate training, and have relevant knowledge that contribute effectively to disaster response and recovery.

The responder or volunteers were divided into; the spontaneous volunteers, and the affiliated volunteers. The spontaneous volunteers are needed to aid disaster victims, rebuild communities, educate and prepare the public for future disasters. They can be categorized in six categories: helpers, returnees, the anxious, the curious, fans or supporters and exploiters.

There were categories of person in the place of disaster, i.e. The helpers were peoples who have come to help victims or responders in some way. The returnees were peoples who lived in the disaster-impacted area but were evacuated. The Anxious were peoples from outside the impacted area who are attempting to obtain information about family and friends. The Curious were peoples who are motivated primarily to view the destruction left after the disaster. The fans or supporters were peoples who gather to display flags and banners encouraging and expressing gratitude to emergency workers. Exploiters were peoples who try to use the disaster for personal gain or profit. From the six categories Helpers should be identified first because they are the only group likely to offer any tangible support to the response and recovery effort (National Community Service, 2007).

The affiliated and selected spontaneous responder or volunteer should have training on the basic Rehabilitation Medicine to prevent disability in disaster survivor.

## 3 CONCLUSION

The impacts of disaster will always lead to the health problems, that lead to increasing the prevalence of disability. There were many professions involved in disaster management, and lack of number of Rehabilitation Medicine Team. The management of disaster was a Team, consisted government, non-government organization, affiliated volunteers and unaffiliated volunteers. Affiliated volunteer and selected unaffiliated volunteer should have trained for the basic Rehabilitation Medicine to prevent disability.

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